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THE

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AMERICAN EPHEMERIS

AND

NAUTICAL ALMANAC

FOR THE YEAR

1892

FIRST EDITION

PUBLISHED IN COMPLIANCE WITH A JOINT RESOLUTION OF THE FORTY-SIXTH CONGRESS

WASHINGTON:
BUREAU OF NAVIGATION.
1889.

~~Sci 3205~~
~~13?.5~~
For 2208

HARVARD
AUG 31 1880

The Bureau of Navigation.

JOINT RESOLUTION

FOR PRINTING THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be printed annually at the Government Printing Office fifteen hundred copies of the American Ephemeris and Nautical Almanac and of the papers supplementary thereto, of which one hundred shall be for the use of the Senate, four hundred for the House of Representatives, and one thousand for the public service, to be distributed by the Navy Department.

Sec. 2 *That additional copies of the Ephemeris and of the Nautical Almanac extracted therefrom may be ordered by the Secretary of the Navy for sale: Provided, That all moneys received from such sale shall be deposited in the Treasury to the credit of the appropriation for public printing.*

Approved, February 11, 1880.

PREFACE.

THE arrangement of *The American Ephemeris* adopted in the volume for the year 1882, and explained in the Appendix to that volume, has been continued without radical change to the present time.

The additions then made comprise more complete data for eclipses of the sun, diagrams showing the configurations of the satellites of Jupiter, data respecting the disks of Mercury and Venus for the reduction of meridian and photometric observations, and diagrams, with tables, for identifying any known satellites of other planets. The work is divided into three parts, as follows:—

Part I, *Ephemeris for the Meridian of Greenwich*, gives the heliocentric and geocentric positions of the major planets, the Ephemeris of the Sun, and other fundamental astronomical data for equidistant intervals of Greenwich mean time.

Part II, *Ephemeris for the Meridian of Washington*, gives the ephemerides of the fixed stars, sun, moon, and major planets for transit over the meridian of Washington. The mean places of the fixed stars and the data for their reduction are also included in this part. The list of mean and apparent places of fixed stars has been greatly enlarged, for the convenience of field-astronomers.

Part III, *Phenomena*, contains predictions of phenomena to be observed, with data for their computation. Washington mean time is used in this part except in a few cases, notably that of eclipses, where Greenwich mean time was judged more convenient.

SIMON NEWCOMB,
Professor U. S. Navy, Superintendent

WASHINGTON, *May*, 1889.

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CORRECTIONS.

Ephemeris for 1890.

Page 487,	Dec. 31^{d} 2^{h},	*for* in Perihelion	*read* ⊕ in Perihelion

Ephemeris for 1891 (*First Edition only*).

Page 298,	Dec. of 4 Ursæ Minoris,	*for* $78^{\circ}\ 8'\ 35''.14$	*read* $78^{\circ}\ 3'\ 35''.14$
300,	R. A., α^2 Capricorni,	" 29^{h}	" 20^{h}
332,	Dec., α Leonis,	" 19°	" 12°
350,	R. A., γ Draconis,	" 15^{h}	" 17^{h}

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1892, WHICH COMPRISES THE LATTER PART OF THE 116TH AND THE BEGINNING OF THE 117TH YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO—

The year 6605 of the Julian Period;
" 7400–7401 of the Byzantine era, the year 7401 commencing on September 1st;
" 5652–53 of the Jewish era, the year 5653 commencing on September 22d, or, more exactly, at sunset on September 21st;
" 2645 since the foundation of Rome, according to VARRO;
" 2639 since the beginning of the era of NABONASSAR, which has been assigned to Wednesday, the 26th of February of the 3967th year of the Julian Period; corresponding, in the notation of chronologists, to the 747th; and, in the notation of astronomers, to the 746th year before the birth of CHRIST;
" 2668 of the Olympiads, or the fourth year of the 667th Olympiad commencing in July, 1892, if we fix the era of the Olympiads at 775½ years before CHRIST, or near the beginning of July of the year 3938 of the Julian Period;
" 2204 of the Grecian era, or the era of the Seleucidæ;
" 1608 of the era of DIOCLETIAN;
" 2552 of the Japanese era and to the 25th year of the period entitled "Meiji."

The year 1310 of the Mohammedan era, or the era of the Hegira, begins on the 26th day of July, 1892.

The first day of January of the year 1892 is the 2,412,099th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letter	C, B	Solar Cycle	25
Epact	1	Roman Indiction	5
Lunar Cycle or Golden Number	12	Julian Period	6605

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, ETC.

☉	The Sun.	♂	Mars.
☾	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
⊕	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring Signs.	1.	♈	Aries.	Autumn Signs.	7.	♎	Libra.
	2.	♉	Taurus.		8.	♏	Scorpius.
	3.	♊	Gemini.		9.	♐	Sagittarius.
Summer Signs.	4.	♋	Cancer.	Winter Signs.	10.	♑	Capricornus.
	5.	♌	Leo.		11.	♒	Aquarius.
	6.	♍	Virgo.		12.	♓	Pisces.

ASPECTS.

☌	Conjunction, or having the same Longitude or Right Ascension.
□	Quadrature, or differing 90° in Longitude or Right Ascension.
☍	Opposition, or differing 180° in Longitude or Right Ascension.

ABBREVIATIONS.

☊	Ascending Node.	°	Degrees.
☋	Descending Node.	′	Minutes of Arc.
N .	North.	″	Seconds of Arc.
S .	South.	h	Hours.
E .	East.	m	Minutes of Time.
W.	West.	s	Seconds of Time.

PART I.

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF GREENWICH.

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Frid.	1	18 46 5.33	11.050	S. 23 1 54.9	+12.16	16 18.37	71.09	3 37.94	1.189
Sat.	2	18 50 30.35	11.035	22 56 49.2	13.31	16 18.37	71.04	4 6.32	1.175
SUN.	3	18 54 55.00	11.019	22 51 16.0	14.45	16 18.37	70.99	4 34.33	1.159
Mon.	4	18 59 19.26	11.002	22 45 15.5	+15.58	16 18.36	70.94	5 1.96	1.143
Tues.	5	19 3 43.09	10.983	22 38 47.9	16.71	16 18.35	70.89	5 29.16	1.123
Wed.	6	19 8 6.47	10.963	22 31 53.4	17.83	16 18.34	70.82	5 55.90	1.104
Thur.	7	19 12 29.35	10.943	22 24 32.2	+18.93	16 18.32	70.76	6 22.16	1.084
Frid.	8	19 16 51.73	10.921	22 16 44.5	20.03	16 18.30	70.69	6 47.90	1.062
Sat.	9	19 21 13.56	10.899	22 8 30.6	21.12	16 18.27	70.63	7 13.10	1.040
SUN.	10	19 25 34.82	10.875	21 59 50.7	+22.19	16 18.24	70.55	7 37.74	1.016
Mon.	11	19 29 55 51	10.850	21 50 45.1	23.26	16 18.20	70.47	8 1.80	0.991
Tues.	12	19 34 15.59	10.824	21 41 14.0	24.31	16 18.15	70.39	8 25.26	0.965
Wed.	13	19 38 35.04	10.798	21 31 17.8	+25.36	16 18.10	70.31	8 48.11	0.939
Thur.	14	19 42 53.86	10.771	21 20 56.8	26.40	16 18.04	70.22	9 10.31	0.912
Frid.	15	19 47 12.02	10.743	21 10 11.1	27.42	16 17.98	70.13	9 31.85	0.884
Sat.	16	19 51 29.51	10.715	20 59 1.0	+28.42	16 17.91	70.03	9 52.72	0.856
SUN.	17	19 55 46.32	10.685	20 47 26.9	29.41	16 17.83	69.94	10 12.92	0.827
Mon.	18	20 0 2.43	10.656	20 35 29.2	30.39	16 17.74	69.84	10 32.42	0.798
Tues.	19	20 4 17 84	10.627	20 23 8.1	+31.36	16 17.65	69.74	10 51.22	0.769
Wed.	20	20 8 32.53	10.597	20 10 23.9	32.31	16 17.56	69.64	11 9.30	0.739
Thur.	21	20 12 46.48	10.567	19 57 17.0	33.25	16 17.46	69.53	11 26.64	0.709
Frid.	22	20 16 59.68	10.536	19 43 47.8	+34.18	16 17.35	69.42	11 43.24	0.678
Sat.	23	20 21 12.13	10.504	19 29 56.5	35.09	16 17.24	69.31	11 59.09	0.646
SUN.	24	20 25 23.81	10.472	19 15 43.5	35.99	16 17.13	69.20	12 14.18	0.614
Mon.	25	20 29 34.72	10.439	19 1 9.2	+36.87	16 17.01	69.09	12 28.49	0.581
Tues.	26	20 33 44.84	10.405	18 46 14.0	37.73	16 16.89	68.98	12 42.02	0.547
Wed.	27	20 37 54.16	10.371	18 30 58.2	38.58	16 16.76	68.87	12 54.75	0.514
Thur.	28	20 42 2.67	10.338	18 15 22.2	+39.42	16 16.63	68.76	13 6.67	0.481
Frid.	29	20 46 10.37	10.304	17 59 26.5	40.22	16 16.50	68.64	13 17.78	0.447
Sat.	30	20 50 17.25	10.270	17 43 11.4	41.02	16 16.36	68.53	13 28.07	0.413
SUN.	31	20 54 23.30	10.235	17 26 37.4	41.80	16 16.22	68.42	13 37.53	0.378
Mon.	32	20 58 28.51	10.200	S. 17 9 44.8	+42.56	16 16.08	68.31	13 46.16	0.343

Note.—The mean time of semidiameter passing may be found by subtracting $0^{s}.19$ from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Frid.	1	18 46 4.66	11.046	S. 23 1 55.6	+12.16	3 37.87	1.189	18 42 26.79
Sat.	2	18 50 29.59	11.031	22 56 50.1	13.30	4 6.24	1.175	18 46 23.35
SUN.	3	18 54 54.16	11.016	22 51 17.1	14.44	4 34.25	1.159	18 50 19.91
Mon.	4	18 59 18.34	10.999	22 45 16.8	+15.57	5 1.87	1.143	18 54 16.47
Tues.	5	19 3 42.09	10.980	22 38 49.4	16.70	5 29.06	1.123	18 58 13.03
Wed.	6	19 8 5.39	10.960	22 31 55.1	17.82	5 55.80	1.104	19 2 9.59
Thur.	7	19 12 28.19	10.940	22 24 34.1	+18.92	6 22.05	1.084	19 6 6.14
Frid.	8	19 16 50.49	10.918	22 16 46.7	20.02	6 47.79	1.062	19 10 2.70
Sat.	9	19 21 12.25	10.896	22 8 33.1	21.11	7 12.99	1.040	19 13 59.26
SUN.	10	19 25 33.44	10.872	21 59 53.5	+22.18	7 37.62	1.016	19 17 55.82
Mon.	11	19 29 54.06	10.847	21 50 48.2	23.25	8 1.67	0.991	19 21 52.38
Tues.	12	19 34 14.07	10.821	21 41 17.4	24.30	8 25.13	0.965	19 25 48.94
Wed.	13	19 38 33.46	10.795	21 31 21.5	+25.35	8 47.97	0.939	19 29 45.49
Thur.	14	19 42 52.22	10.768	21 21 0.8	26.39	9 10.17	0.912	19 33 42.05
Frid.	15	19 47 10.32	10.740	21 10 15.3	27.41	9 31.71	0.884	19 37 38.61
Sat.	16	19 51 27.75	10.712	20 59 5.6	+28.41	9 52.58	0.856	19 41 35.17
SUN.	17	19 55 44.50	10.683	20 47 31.9	29.40	10 12.78	0.827	19 45 31.72
Mon.	18	20 0 0.56	10.654	20 35 34.5	30.38	10 32.28	0.798	19 49 28.28
Tues.	19	20 4 15.92	10.625	20 23 13.7	+31.35	10 51.08	0.769	19 53 24.84
Wed.	20	20 8 30.56	10.595	20 10 29.9	32.30	11 9.16	0.739	19 57 21.40
Thur.	21	20 12 44.46	10.565	19 57 23.3	33.24	11 26.50	0.709	20 1 17.96
Frid.	22	20 16 57.62	10.534	19 43 54.4	+34.17	11 43.10	0.678	20 5 14.52
Sat.	23	20 21 10.03	10.502	19 30 3.4	35.08	11 58.96	0.646	20 9 11.07
SUN.	24	20 25 21.68	10.470	19 15 50.8	35.98	12 14.05	0.614	20 13 7.63
Mon.	25	20 29 32.55	10.437	19 1 16.8	+36.86	12 28.37	0.581	20 17 4.18
Tues.	26	20 33 42.64	10.403	18 46 21.9	37.72	12 41.90	0.547	20 21 0.74
Wed.	27	20 37 51 93	10.370	18 31 6.4	38.57	12 54.63	0.514	20 24 57.30
Thur.	28	20 42 0.42	10.337	18 15 30.7	+39.40	13 6.56	0.481	20 28 53.86
Frid.	29	20 46 8.09	10.303	17 59 35.3	40.21	13 17.68	0.447	20 32 50.41
Sat.	30	20 50 14.95	10.269	17 43 20.6	41.01	13 27.98	0.413	20 36 46.97
SUN.	31	20 54 20.98	10.234	17 26 46.9	41.79	13 37.45	0.378	20 40 43.53
Mon.	32	20 58 26.17	10.199	S. 17 9 54.6	+42.55	13 46.09	0.343	20 44 40.09

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

Diff. for 1 hour.
$+9^{s}.8565$.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	1	280 35 45.0	35 58.3	152.96	− 0.66	9.9926724	− 1.0	5 16 41.19
2	2	281 36 56.2	37 9.3	152.95	0.70	9.9926708	− 0.3	5 12 45.28
3	3	282 38 7.1	38 20.0	152.94	0.70	9.9926710	+ 0.5	5 8 49.37
4	4	283 39 17.7	39 30.4	152.93	− 0.67	9.9926730	+ 1.2	5 4 53.46
5	5	284 40 27.9	40 40.4	152.92	0.61	9.9926769	2.0	5 0 57.54
6	6	285 41 37.7	41 50.1	152.90	0.53	9.9926828	2.9	4 57 1.63
7	7	286 42 47.1	42 59.3	152.88	− 0.42	9.9926908	+ 3.8	4 53 5.71
8	8	287 43 56.0	44 8.0	152.86	0.30	9.9927012	4.8	4 49 9.80
9	9	288 45 4.4	45 16.2	152.84	0.18	9.9927141	5.8	4 45 13.88
10	10	289 46 12.3	46 23.9	152.82	− 0.04	9.9927295	+ 6.9	4 41 17.97
11	11	290 47 19.6	47 31.1	152.79	+ 0.09	9.9927475	8.1	4 37 22.05
12	12	291 48 26.4	48 37.7	152.77	0.21	9.9927682	9.2	4 33 26.14
13	13	292 49 32.6	49 43.7	152.75	+ 0.31	9.9927917	+10.4	4 29 30.24
14	14	293 50 38.3	50 49.2	152.73	0.39	9.9928181	11.5	4 25 34.33
15	15	294 51 43.6	51 54.3	152.71	0.45	9.9928473	12.7	4 21 38.42
16	16	295 52 48.5	52 59.1	152.70	+ 0.47	9.9928792	+13.8	4 17 42.51
17	17	296 53 53.0	54 3.4	152.68	0.46	9.9929139	15.0	4 13 46.59
18	18	297 54 57.0	55 7.2	152.66	0.42	9.9929512	16.0	4 9 50.67
19	19	298 56 0.6	56 10.6	152.64	+ 0 35	9.9929911	+17.0	4 5 54.76
20	20	299 57 3.8	57 13.7	152.63	0.26	9.9930334	18.0	4 1 58.85
21	21	300 58 6.6	58 16.4	152.61	0.16	9.9930781	19.0	3 58 2.94
22	22	301 59 9.0	59 18.6	152.59	+ 0.01	9.9931250	+20.0	3 54 7.03
23	23	303 0 11.0	0 20.4	152.57	− 0.09	9.9931740	20.8	3 50 11.13
24	24	304 1 12.4	1 21.6	152.55	0.23	9.9932248	21.5	3 46 15.22
25	25	305 2 13.2	2 22.3	152.52	− 0.36	9.9932773	+22.2	3 42 19.30
26	26	306 3 13.4	3 22.4	152.49	0.47	9.9933314	22.9	3 38 23.38
27	27	307 4 12.9	4 21.7	152.46	0.56	9.9933871	23.5	3 34 27.47
28	28	308 5 11.6	5 20.2	152.43	− 0.62	9.9934442	+24.1	3 30 31.56
29	29	309 6 9.4	6 17.8	152.39	0.66	9.9935027	24.7	3 26 35.65
30	30	310 7 6.1	7 14.4	152.34	0.67	9.9935627	25.3	3 22 39.74
31	31	311 8 1.6	8 9.8	152.29	0.65	9.9936241	25.9	3 18 43.83
32	32	312 8 56.0	9 4.0	152.24	− 0.59	9.9936868	+26.5	3 14 47.92

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′, to the mean equinox of January 1d.0.

Diff. for 1 Hour,
— 9s.8296.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 55.5	15 59.0	58 20.1	+1.16	58 33.1	+1.02	1 24.5	2.43	1.4
2	16 2.2	16 4.8	58 44.5	0.87	58 54.0	0.72	2 21.9	2.33	2.4
3	16 6.9	16 8.4	59 1.7	0.57	59 7.5	0.43	3 16.5	2.22	3.4
4	16 9.6	16 10.3	59 11.8	+0.29	59 14.4	+0.16	4 8.3	2.11	4.4
5	16 10.6	16 10.6	59 15.6	+0.05	59 15.5	−0.07	4 57.8	2.04	5.4
6	16 10.2	16 9.6	59 14.1	−0.17	59 11.6	0.26	5 46.0	2.01	6.4
7	16 8.6	16 7.4	59 8.1	−0.34	59 3.5	−0.43	6 34.5	2.05	7.4
8	16 5.8	16 4.0	58 57.9	0.51	58 51.3	0.60	7 24.3	2.13	8.4
9	16 2.0	15 59.6	58 43.7	0.68	58 35.1	0.77	8 16.6	2.24	9.4
10	15 57.0	15 54.0	58 25.4	−0.86	58 14.6	−0.95	9 11.6	2.34	10.4
11	15 50.8	15 47.3	58 2.7	1.04	57 49.7	1.13	10 9.1	2.41	11.4
12	15 43.4	15 39.4	57 35.7	1.21	57 20.8	1.29	11 7.4	2.41	12.4
13	15 35.1	15 30.7	57 5.1	−1.34	56 48.8	−1.38	12 4.8	2.33	13.4
14	15 26.1	15 21.5	56 32.0	1.41	56 15.0	1.41	12 59.2	2.19	14.4
15	15 16.9	15 12.4	55 58.1	1.40	55 41.6	1.36	13 49.8	2.05	15.4
16	15 8.1	15 4.0	55 25.7	−1.29	55 10.7	−1.21	14 36.5	1.89	16.4
17	15 0.2	14 56.8	54 56.8	1.10	54 44.4	0.97	15 19.9	1.76	17.4
18	14 53.9	14 51.5	54 33.7	0.81	54 25.0	0.65	16 0.9	1.68	18.4
19	14 49.7	14 48.5	54 18.3	−0.46	54 14.0	−0.26	16 40.6	1.65	19.4
20	14 48.0	14 48.1	54 12.0	−0.06	54 12.6	+0.16	17 20.1	1.66	20.4
21	14 49.0	14 50.6	54 15.8	+0.38	54 21.7	0.60	18 0.5	1.73	21.4
22	14 52.9	14 56.0	54 30.2	+0.82	54 41.3	+1.03	18 43.0	1.84	22.4
23	14 59.6	15 4.0	54 54.8	1.24	55 10.8	1.43	19 28.7	1.99	23.4
24	15 8.9	15 14.4	55 28.9	1.60	55 48.9	1.74	20 18.3	2.15	24.4
25	15 20.3	15 26.5	56 10.6	+1.87	56 33.6	+1.95	21 12.1	2.32	25.4
26	15 33.0	15 39.6	56 57.4	2.01	57 21.7	2.03	22 9.6	2.44	26.4
27	15 46.3	15 52.7	57 46.0	2.00	58 9.7	1.93	23 9.0	2.47	27.4
28	15 58.8	16 4.5	58 32.2	+1.81	58 53.2	+1.67	☌		28.4
29	16 9.7	16 14.2	59 12.1	1.48	59 28.5	1.25	0 8.4	2.43	29.4
30	16 17.8	16 20.7	59 42.0	1.00	59 52.5	0.75	1 5.8	2.33	0.8
31	16 22.7	16 23.7	59 59.7	+0.47	60 3.6	+0.20	2 0.4	2.22	1.8
32	16 23.9	16 23.3	60 4.4	−0.06	60 2.2	−0.30	2 52.2	2.12	2.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 1.					**SUNDAY 3.**				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	20 3 38.47	2.5087	S.25 4 3.7	5.684	0	21 59 51.62	2.3148	S.17 42 39.1	12.243
1	20 6 8.92	2.5063	24 58 17.8	5.846	1	22 2 10.37	2.3101	17 30 21.4	12.347
2	20 8 39.23	2.5038	24 52 22.2	6.007	2	22 4 28.83	2.3054	17 17 57.5	12.449
3	20 11 9.38	2.5012	24 46 17.0	6.167	3	22 6 47.01	2.3007	17 5 27.5	12.550
4	20 13 39.37	2.4985	24 40 2.2	6.327	4	22 9 4.91	2.2960	16 52 51.5	12.650
5	20 16 9.20	2.4957	24 33 37.8	6.485	5	22 11 22.53	2.2913	16 40 9.5	12.748
6	20 18 38.85	2.4927	24 27 4.0	6.642	6	22 13 39.87	2.2867	16 27 21.7	12.844
7	20 21 8.32	2.4897	24 20 20.8	6.799	7	22 15 56.94	2.2822	16 14 28.2	12.939
8	20 23 37.61	2.4867	24 13 28.1	6.956	8	22 18 13.73	2.2776	16 1 29.0	13.033
9	20 26 6.72	2.4835	24 6 26.1	7.111	9	22 20 30.25	2.2731	15 48 24.2	13.125
10	20 28 35.63	2.4801	23 59 14.8	7.265	10	22 22 46.50	2.2686	15 35 14.0	13.215
11	20 31 4.33	2.4767	23 51 54.3	7.418	11	22 25 2.48	2.2642	15 21 58.4	13.304
12	20 33 32.83	2.4732	23 44 24.6	7.571	12	22 27 18.20	2.2597	15 8 37.5	13.392
13	20 36 1.12	2.4697	23 36 45.8	7.722	13	22 29 33.65	2.2553	14 55 11.4	13.478
14	20 38 29.19	2.4661	23 28 58.0	7.872	14	22 31 48.84	2.2510	14 41 40.2	13.562
15	20 40 57.05	2.4624	23 21 1.2	8.021	15	22 34 3.77	2.2467	14 28 4.0	13.644
16	20 43 24.68	2.4586	23 12 55.5	8.169	16	22 36 18.44	2.2424	14 14 22.9	13.726
17	20 45 52.08	2.4547	23 4 40.9	8.316	17	22 38 32.86	2.2382	14 0 36.9	13.806
18	20 48 19.24	2.4507	22 56 17.6	8.462	18	22 40 47.02	2.2340	13 46 46.2	13.884
19	20 50 46.16	2.4468	22 47 45.5	8.607	19	22 43 0.94	2.2299	13 32 50.8	13.961
20	20 53 12.85	2.4428	22 39 4.7	8.751	20	22 45 14.61	2.2258	13 18 50.9	14.036
21	20 55 39.30	2.4387	22 30 15.4	8.893	21	22 47 28.03	2.2217	13 4 46.5	14.110
22	20 58 5.50	2.4345	22 21 17.6	9.034	22	22 49 41.21	2.2177	12 50 37.7	14.182
23	21 0 31.44	2.4303	S.22 12 11.3	9.175	23	22 51 54.16	2.2138	S.12 36 24.7	14.252
SATURDAY 2.					**MONDAY 4.**				
0	21 2 57.13	2.4260	S.22 2 56.6	9.314	0	22 54 6.87	2.2099	S.12 22 7.5	14.321
1	21 5 22.56	2.4217	21 53 33.6	9.452	1	22 56 19.35	2.2061	12 7 46.2	14.389
2	21 7 47.73	2.4173	21 44 2.4	9.588	2	22 58 31.60	2.2024	11 53 20.8	14.456
3	21 10 12.63	2.4128	21 34 23.1	9.723	3	23 0 43.63	2.1987	11 38 51.5	14.520
4	21 12 37.26	2.4083	21 24 35.7	9.857	4	23 2 55.44	2.1950	11 24 18.4	14.582
5	21 15 1.63	2.4039	21 14 40.3	9.989	5	23 5 7.03	2.1914	11 9 41.6	14.644
6	21 17 25.73	2.3993	21 4 37.0	10.120	6	23 7 18.41	2.1879	10 55 1.1	14.704
7	21 19 49.55	2.3948	20 54 25.9	10.250	7	23 9 29.58	2.1845	10 40 17.1	14.763
8	21 22 13.10	2.3903	20 44 7.0	10.379	8	23 11 40.55	2.1811	10 25 29.6	14.820
9	21 24 36.38	2.3857	20 33 40.4	10.506	9	23 13 51.31	2.1777	10 10 38.7	14.875
10	21 26 59.38	2.3810	20 23 6.3	10.631	10	23 16 1.87	2.1744	9 55 44.6	14.929
11	21 29 22.10	2.3762	20 12 24.7	10.756	11	23 18 12.24	2.1712	9 40 47.3	14.982
12	21 31 44.53	2.3715	20 1 35.6	10.879	12	23 20 22.42	2.1681	9 25 46.8	15.033
13	21 34 6.68	2.3668	19 50 39.2	11.001	13	23 22 32.41	2.1650	9 10 43.3	15.082
14	21 36 28.55	2.3621	19 39 35.5	11.121	14	23 24 42.22	2.1621	8 55 36.9	15.130
15	21 38 50.14	2.3574	19 28 24.7	11.239	15	23 26 51.86	2.1592	8 40 27.7	15.177
16	21 41 11.44	2.3527	19 17 6.8	11.357	16	23 29 1.32	2.1563	8 25 15.7	15.222
17	21 43 32.46	2.3480	19 5 41.9	11.473	17	23 31 10.61	2.1535	8 10 1.1	15.265
18	21 45 53.20	2.3432	18 54 10.1	11.587	18	23 33 19.74	2.1508	7 54 43.9	15.307
19	21 48 13.65	2.3384	18 42 31.5	11.700	19	23 35 28.71	2.1482	7 39 24.2	15.348
20	21 50 33.81	2.3337	18 30 46.1	11.812	20	23 37 37.52	2.1456	7 24 2.1	15.387
21	21 52 53.69	2.3289	18 18 54.1	11.922	21	23 39 46.18	2.1431	7 8 37.7	15.425
22	21 55 13.28	2.3242	18 6 55.5	12.030	22	23 41 54.69	2.1407	6 53 11.1	15.461
23	21 57 32.59	2.3195	17 54 50.5	12.137	23	23 44 3.06	2.1384	6 37 42.4	15.496
24	21 59 51.62	2.3148	S.17 42 39.1	12.243	24	23 46 11.30	2.1361	S. 6 22 11.6	15.530

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 46 11.30	2.1361	S. 6 22 11.6	15.530
1	23 48 19.40	2.1339	6 6 38.8	15.562
2	23 50 27.37	2.1318	5 51 4.2	15.592
3	23 52 35.22	2.1298	5 35 27.8	15.621
4	23 54 42.95	2.1279	5 19 49.7	15.648
5	23 56 50.57	2.1261	5 4 10.0	15.674
6	23 58 58.08	2.1243	4 48 28.8	15.699
7	0 1 5.48	2.1225	4 32 46.1	15.722
8	0 3 12.78	2.1209	4 17 2.1	15.743
9	0 5 19.99	2.1194	4 1 16.9	15.763
10	0 7 27.11	2.1179	3 45 30.5	15.783
11	0 9 34.14	2.1165	3 29 42.9	15.802
12	0 11 41.09	2.1152	3 13 54.3	15.818
13	0 13 47.96	2.1140	2 58 4.8	15.832
14	0 15 54.77	2.1129	2 42 14.5	15.845
15	0 18 1.51	2.1118	2 26 23.4	15.857
16	0 20 8.19	2.1109	2 10 31.6	15.868
17	0 22 14.82	2.1100	1 54 39.2	15.877
18	0 24 21.39	2.1092	1 38 46.4	15.884
19	0 26 27.92	2.1085	1 22 53.2	15.890
20	0 28 34.41	2.1078	1 6 59.6	15.896
21	0 30 40.86	2.1072	0 51 5.7	15.900
22	0 32 47.28	2.1068	0 35 11.6	15.902
23	0 34 53.68	2.1065	S. 0 19 17.5	15.902

WEDNESDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	0 37 0.06	2.1062	S. 0 3 23.4	15.901
1	0 39 6.42	2.1059	N. 0 12 30.6	15.899
2	0 41 12.77	2.1058	0 28 24.5	15.896
3	0 43 19.12	2.1058	0 44 18.1	15.891
4	0 45 25.47	2.1058	1 0 11.4	15.885
5	0 47 31.82	2.1059	1 16 4.3	15.877
6	0 49 38.18	2.1061	1 31 56.6	15.867
7	0 51 44.55	2.1064	1 47 48.3	15.857
8	0 53 50.95	2.1068	2 3 39.4	15.846
9	0 55 57.37	2.1072	2 19 29.8	15.832
10	0 58 3.82	2.1078	2 35 19.3	15.817
11	1 0 10.31	2.1085	2 51 7.8	15.801
12	1 2 16.84	2.1092	3 6 55.4	15.784
13	1 4 23.41	2.1099	3 22 41.9	15.765
14	1 6 30.03	2.1108	3 38 27.2	15.745
15	1 8 36.71	2.1118	3 54 11.3	15.723
16	1 10 43.45	2.1128	4 9 54.0	15.700
17	1 12 50.25	2.1139	4 25 35.3	15.676
18	1 14 57.12	2.1151	4 41 15.1	15.650
19	1 17 4.06	2.1164	4 56 53.3	15.623
20	1 19 11.09	2.1178	5 12 29.9	15.595
21	1 21 18.20	2.1192	5 28 4.7	15.565
22	1 23 25.40	2.1208	5 43 37.7	15.534
23	1 25 32.70	2.1224	5 59 8.8	15.502
24	1 27 40.09	2.1241	N. 6 14 37.9	15.468

THURSDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 27 40.09	2.1241	N. 6 14 37.9	15.468
1	1 29 47.59	2.1259	6 30 4.9	15.432
2	1 31 55.20	2.1277	6 45 29.7	15.395
3	1 34 2.91	2.1295	7 0 52.3	15.357
4	1 36 10.74	2.1315	7 16 12.6	15.318
5	1 38 18.69	2.1336	7 31 30.5	15.277
6	1 40 26.77	2.1358	7 46 45.8	15.234
7	1 42 34.98	2.1380	8 1 58.5	15.190
8	1 44 43.33	2.1402	8 17 8.6	15.146
9	1 46 51.81	2.1426	8 32 16.0	15.100
10	1 49 0.44	2.1451	8 47 20.6	15.052
11	1 51 9.22	2.1476	9 2 22.2	15.002
12	1 53 18.15	2.1502	9 17 20.8	14.951
13	1 55 27.24	2.1528	9 32 16.3	14.899
14	1 57 36.49	2.1556	9 47 8.7	14.846
15	1 59 45.91	2.1584	10 1 57.8	14.791
16	2 1 55.49	2.1612	10 16 43.6	14.735
17	2 4 5.25	2.1642	10 31 26.0	14.677
18	2 6 15.19	2.1672	10 46 4.9	14.618
19	2 8 25.31	2.1702	11 0 40.2	14.557
20	2 10 35.62	2.1733	11 15 11.8	14.496
21	2 12 46.11	2.1765	11 29 39.7	14.433
22	2 14 56.80	2.1796	11 44 3.8	14.368
23	2 17 7.69	2.1831	N. 11 58 23.9	14.302

FRIDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 19 18.77	2.1864	N. 12 12 40.0	14.234
1	2 21 30.06	2.1899	12 26 52.0	14.165
2	2 23 41.56	2.1933	12 40 59.8	14.095
3	2 25 53.26	2.1968	12 55 3.4	14.024
4	2 28 5.18	2.2005	13 9 2.7	13.951
5	2 30 17.32	2.2042	13 22 57.5	13.876
6	2 32 29.69	2.2080	13 36 47.8	13.800
7	2 34 42.28	2.2117	13 50 33.5	13.722
8	2 36 55.10	2.2155	14 4 14.5	13.644
9	2 39 8.14	2.2193	14 17 50.8	13.564
10	2 41 21.42	2.2232	14 31 22.2	13.482
11	2 43 34.93	2.2272	14 44 48.7	13.399
12	2 45 48.68	2.2312	14 58 10.1	13.314
13	2 48 2.67	2.2352	15 11 26.4	13.229
14	2 50 16.91	2.2393	15 24 37.6	13.142
15	2 52 31.39	2.2434	15 37 43.5	13.053
16	2 54 46.12	2.2476	15 50 44.0	12.963
17	2 57 1.10	2.2518	16 3 39.1	12.872
18	2 59 16.33	2.2560	16 16 28.6	12.778
19	3 1 31.82	2.2602	16 29 12.5	12.684
20	3 3 47.56	2.2645	16 41 50.7	12.589
21	3 6 3.56	2.2688	16 54 23.2	12.492
22	3 8 19.82	2.2732	17 6 49.8	12.393
23	3 10 36.35	2.2776	17 19 10.4	12.293
24	3 12 53.14	2.2820	N. 17 31 25.0	12.192

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 9.			
	h m s	s	° ′ ″	″
0	3 12 53.14	2.2820	N.17 31 25.0	12.192
1	3 15 10.19	2.2864	17 43 33.5	12.090
2	3 17 27.51	2.2908	17 55 35.8	11.986
3	3 19 45.09	2.2952	18 7 31.8	11.881
4	3 22 2.94	2.2997	18 19 21.5	11.774
5	3 24 21.06	2.3042	18 31 4.7	11.666
6	3 26 39.45	2.3087	18 42 41.4	11.557
7	3 28 58.11	2.3132	18 54 11.5	11.446
8	3 31 17.04	2.3177	19 5 34.9	11.334
9	3 33 36.23	2.3222	19 16 51.6	11.221
10	3 35 55.70	2.3267	19 28 1.4	11.106
11	3 38 15.44	2.3312	19 39 4.3	10.990
12	3 40 35.45	2.3357	19 50 0.2	10.872
13	3 42 55.73	2.3402	20 0 49.0	10.753
14	3 45 16.27	2.3447	20 11 30.6	10.633
15	3 47 37.09	2.3492	20 22 5.0	10.512
16	3 49 58.18	2.3537	20 32 32.1	10.390
17	3 52 19.53	2.3581	20 42 51.8	10.266
18	3 54 41.15	2.3625	20 53 4.0	10.141
19	3 57 3.03	2.3669	21 3 8.7	10.014
20	3 59 25.18	2.3714	21 13 5.7	9.886
21	4 1 47.60	2.3758	21 22 55.0	9.757
22	4 4 10.28	2.3801	21 32 36.6	9.627
23	4 6 33.21	2.3844	N.21 42 10.3	9.496
	SUNDAY 10.			
0	4 8 56.40	2.3887	N.21 51 36.1	9.363
1	4 11 19.85	2.3929	22 0 53.9	9.230
2	4 13 43.55	2.3971	22 10 3.7	9.095
3	4 16 7.50	2.4012	22 19 5.3	8.959
4	4 18 31.70	2.4053	22 27 58.7	8.822
5	4 20 56.14	2.4093	22 36 43.9	8.683
6	4 23 20.82	2.4133	22 45 20.7	8.543
7	4 25 45.74	2.4173	22 53 49.1	8.403
8	4 28 10.90	2.4212	23 2 9.1	8.261
9	4 30 36.29	2.4251	23 10 20.5	8.118
10	4 33 1.91	2.4289	23 18 23.3	7.975
11	4 35 27.76	2.4327	23 26 17.5	7.832
12	4 37 53.83	2.4363	23 34 3.1	7.687
13	4 40 20.12	2.4399	23 41 39.9	7.539
14	4 42 46.62	2.4434	23 49 7.8	7.390
15	4 45 13.33	2.4468	23 56 26.7	7.241
16	4 47 40.24	2.4502	24 3 36.7	7.092
17	4 50 7.35	2.4535	24 10 37.7	6.942
18	4 52 34.66	2.4567	24 17 29.7	6.791
19	4 55 2.16	2.4598	24 24 12.6	6.638
20	4 57 29.84	2.4628	24 30 46.3	6.485
21	4 59 57.70	2.4658	24 37 10.8	6.332
22	5 2 25.74	2.4687	24 43 26.1	6.177
23	5 4 53.95	2.4715	24 49 32.0	6.021
24	5 7 22.32	2.4742	N.24 55 28.6	5.865

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 11.			
	h m s	s	° ′ ″	″
0	5 7 22.32	2.4742	N.24 55 28.6	5.865
1	5 9 50.85	2.4768	25 1 15.8	5.708
2	5 12 19.53	2.4793	25 6 53.6	5.551
3	5 14 48.36	2.4817	25 12 21.9	5.392
4	5 17 17.33	2.4839	25 17 40.7	5.233
5	5 19 46.43	2.4861	25 22 49.9	5.074
6	5 22 15.66	2.4882	25 27 49.6	4.914
7	5 24 45.01	2.4902	25 32 39.6	4.753
8	5 27 14.48	2.4920	25 37 20.0	4.592
9	5 29 44.05	2.4937	25 41 50.7	4.431
10	5 32 13.72	2.4953	25 46 11.7	4.268
11	5 34 43.49	2.4968	25 50 22.9	4.106
12	5 37 13.34	2.4982	25 54 24.4	3.943
13	5 39 43.27	2.4995	25 58 16.1	3.779
14	5 42 13.28	2.5007	26 1 57.9	3.615
15	5 44 43.35	2.5017	26 5 29.9	3.452
16	5 47 13.48	2.5026	26 8 52.1	3.288
17	5 49 43.66	2.5033	26 12 4.4	3.123
18	5 52 13.88	2.5040	26 15 6.8	2.958
19	5 54 44.14	2.5046	26 17 59.3	2.793
20	5 57 14.43	2.5049	26 20 41.9	2.628
21	5 59 44.73	2.5051	26 23 14.6	2.462
22	6 2 15.04	2.5052	26 25 37.3	2.296
23	6 4 45.36	2.5053	N.26 27 50.1	2.131
	TUESDAY 12.			
0	6 7 15.68	2.5052	N.26 29 53.0	1.965
1	6 9 45.99	2.5050	26 31 45.9	1.798
2	6 12 16.28	2.5045	26 33 28.9	1.634
3	6 14 46.53	2.5039	26 35 2.0	1.468
4	6 17 16.75	2.5033	26 36 25.1	1.302
5	6 19 46.93	2.5026	26 37 38.3	1.137
6	6 22 17.06	2.5017	26 38 41.5	0.971
7	6 24 47.13	2.5007	26 39 34.8	0.806
8	6 27 17.14	2.4995	26 40 18.2	0.643
9	6 29 47.07	2.4981	26 40 51.8	0.478
10	6 32 16.91	2.4967	26 41 15.5	0.313
11	6 34 46.67	2.4952	26 41 29.3	+ 0.148
12	6 37 16.33	2.4934	26 41 33.3	− 0.016
13	6 39 45.88	2.4916	26 41 27.4	0.179
14	6 42 15.32	2.4897	26 41 11.8	0.342
15	6 44 44.64	2.4876	26 40 46.4	0.505
16	6 47 13.83	2.4853	26 40 11.2	0.667
17	6 49 42.88	2.4829	26 39 26.3	0.829
18	6 52 11.78	2.4804	26 38 31.7	0.990
19	6 54 40.53	2.4778	26 37 27.5	1.151
20	6 57 9.12	2.4752	26 36 13.6	1.312
21	6 59 37.55	2.4723	26 34 50.1	1.471
22	7 2 5.80	2.4693	26 33 17.1	1.630
23	7 4 33.87	2.4663	26 31 34.5	1.789
24	7 7 1.76	2.4632	N.26 29 42.4	1.947

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	7 7 1.76	2.4632	N.26 29 42.4	1.947
1	7 9 29.45	2.4598	26 27 40.9	2.104
2	7 11 56.93	2.4563	26 25 30.0	2.260
3	7 14 24.20	2.4526	26 23 9.7	2.416
4	7 16 51.26	2.4491	26 20 40.1	2.571
5	7 19 18.09	2.4453	26 18 1.2	2.724
6	7 21 44.69	2.4414	26 15 13.2	2.877
7	7 24 11.06	2.4375	26 12 16.0	3.030
8	7 26 37.19	2.4333	26 9 9.6	3.182
9	7 29 3.06	2.4291	26 5 54.1	3.333
10	7 31 28.68	2.4248	26 2 29.6	3.483
11	7 33 54.04	2.4204	25 58 56.1	3.632
12	7 36 19.13	2.4159	25 55 13.8	3.779
13	7 38 43.95	2.4113	25 51 22.6	3.926
14	7 41 8.49	2.4067	25 47 22.6	4.073
15	7 43 32.75	2.4019	25 43 13.8	4.219
16	7 45 56.72	2.3971	25 38 56.3	4.362
17	7 48 20.40	2.3922	25 34 30.3	4.504
18	7 50 43.78	2.3871	25 29 55.8	4.646
19	7 53 6.85	2.3820	25 25 12.8	4.787
20	7 55 29.62	2.3769	25 20 21.3	4.926
21	7 57 52.08	2.3717	25 15 21.4	5.067
22	8 0 14.22	2.3663	25 10 13.2	5.205
23	8 2 36.04	2.3609	N.25 4 56.8	5.341

THURSDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	8 4 57.53	2.3554	N.24 59 32.3	5.476
1	8 7 18.69	2.3499	24 53 59.7	5.611
2	8 9 39 52	2.3443	24 48 19.0	5.744
3	8 12 0.01	2.3387	24 42 30.4	5.876
4	8 14 20.16	2.3330	24 36 33.9	6.007
5	8 16 39.97	2.3272	24 30 29.6	6.136
6	8 18 59.43	2.3214	24 24 17.6	6.264
7	8 21 18.54	2.3156	24 17 57.9	6.392
8	8 23 37.30	2.3097	24 11 30.6	6.518
9	8 25 55.70	2.3037	24 4 55.8	6.643
10	8 28 13.75	2.2977	23 58 13.5	6.767
11	8 30 31.43	2.2917	23 51 23.8	6.888
12	8 32 48.75	2.2856	23 44 26.9	7.008
13	8 35 5.70	2.2795	23 37 22.8	7.128
14	8 37 22.29	2.2734	23 30 11.5	7.247
15	8 39 38.51	2.2672	23 22 53.1	7.365
16	8 41 54.36	2.2610	23 15 27.7	7.480
17	8 44 9.83	2.2547	23 7 55.5	7.594
18	8 46 24.93	2.2485	23 0 16.4	7.708
19	8 48 39.65	2.2422	22 52 30.5	7.821
20	8 50 54.00	2.2360	22 44 37.9	7.931
21	8 53 7.97	2.2297	22 36 38.8	8.039
22	8 55 21.56	2.2234	22 28 33.2	8.148
23	8 57 34.77	2.2171	22 20 21.1	8.256
24	8 59 47.61	2.2107	N.22 12 2.5	8.362

FRIDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	8 59 47.61	2.2107	N.22 12 2.5	8.362
1	9 2 0.06	2.2043	22 3 37.7	8.465
2	9 4 12.13	2.1980	21 55 6.7	8.568
3	9 6 23.82	2.1917	21 46 29.5	8.671
4	9 8 35.13	2.1853	21 37 46.2	8.771
5	9 10 46.06	2.1790	21 28 57.0	8.869
6	9 12 56.61	2.1727	21 20 1.9	8.967
7	9 15 6.78	2.1663	21 11 1.0	9.063
8	9 17 16.57	2.1600	21 1 54.3	9.159
9	9 19 25.98	2.1537	20 52 41.9	9.253
10	9 21 35.01	2.1473	20 43 23.9	9.346
11	9 23 43.66	2.1410	20 34 0.4	9.437
12	9 25 51.93	2.1347	20 24 31.4	9.527
13	9 27 59.82	2.1284	20 14 57.1	9.616
14	9 30 7.34	2.1222	20 5 17.5	9.704
15	9 32 14.49	2.1161	19 55 32.6	9.791
16	9 34 21.27	2.1098	19 45 42.6	9.876
17	9 36 27.67	2.1036	19 35 47.5	9.960
18	9 38 33.70	2.0974	19 25 47.4	10.042
19	9 40 39.36	2.0913	19 15 42.4	10.124
20	9 42 44.66	2.0852	19 5 32.5	10.204
21	9 44 49.59	2.0792	18 55 17.9	10.283
22	9 46 54.16	2.0732	18 44 58.6	10.361
23	9 48 58.37	2.0672	N.18 34 34.6	10.437

SATURDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	9 51 2.22	2.0612	N.18 24 6.1	10.512
1	9 53 5.71	2.0552	18 13 33.1	10.587
2	9 55 8.85	2.0493	18 2 55.7	10.659
3	9 57 11.63	2.0434	17 52 14.0	10.731
4	9 59 14.06	2.0376	17 41 28.0	10.802
5	10 1 16.15	2.0319	17 30 37.8	10.872
6	10 3 17.89	2.0262	17 19 43.4	10.940
7	10 5 19.29	2.0205	17 8 45.0	11.007
8	10 7 20.35	2.0148	16 57 42.6	11.072
9	10 9 21.06	2.0091	16 46 36.3	11.137
10	10 11 21.44	2.0036	16 35 26.2	11.200
11	10 13 21.49	1.9981	16 24 12.3	11.263
12	10 15 21.21	1.9927	16 12 54.6	11.325
13	10 17 20.61	1.9872	16 1 33.3	11.385
14	10 19 19.68	1.9818	15 50 8.4	11.444
15	10 21 18.43	1.9765	15 38 40.0	11.502
16	10 23 16.86	1.9713	15 27 8.2	11.559
17	10 25 14.98	1.9661	15 15 32.9	11.616
18	10 27 12.79	1.9609	15 3 54.3	11.671
19	10 29 10.29	1.9558	14 52 12.4	11.724
20	10 31 7.49	1.9507	14 40 27.4	11.776
21	10 33 4.38	1.9457	14 28 39.3	11.828
22	10 35 0.97	1.9408	14 16 48.1	11.879
23	10 36 57.27	1.9360	14 4 53.8	11.929
24	10 38 53.29	1.9312	N.13 52 56.6	11.977

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	10 38 53.29	1.9312	N.13 52 56.6	11.977
1	10 40 49.02	1.9264	13 40 56.5	12.025
2	10 42 44.46	1.9217	13 28 53.6	12.072
3	10 44 39.62	1.9171	13 16 47.9	12.117
4	10 46 34.51	1.9125	13 4 39.5	12.162
5	10 48 29.12	1.9079	12 52 28.4	12.206
6	10 50 23.46	1.9035	12 40 14.8	12.248
7	10 52 17.54	1.8992	12 27 58.7	12.290
8	10 54 11.36	1.8948	12 15 40.0	12.332
9	10 56 4.91	1.8904	12 3 18.9	12.372
10	10 57 58.21	1.8862	11 50 55.4	12.411
11	10 59 51.26	1.8821	11 38 29.6	12.448
12	11 1 44.07	1.8781	11 26 1.6	12.485
13	11 3 36.63	1.8741	11 13 31.4	12.522
14	11 5 28.96	1.8702	11 0 59.0	12.557
15	11 7 21.05	1.8663	10 48 24.5	12.591
16	11 9 12.91	1.8625	10 35 48.0	12.624
17	11 11 4.55	1.8587	10 23 9.6	12.657
18	11 12 55.96	1.8550	10 10 29.2	12.689
19	11 14 47.15	1.8514	9 57 46.9	12.720
20	11 16 38.13	1.8479	9 45 2.8	12.750
21	11 18 28.90	1.8444	9 32 16.9	12.779
22	11 20 19.46	1.8410	9 19 29.3	12.808
23	11 22 9.82	1.8377	N. 9 6 39.9	12.836

MONDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	11 23 59.98	1.8344	N. 8 53 48.9	12.862
1	11 25 49.95	1.8312	8 40 56.4	12.888
2	11 27 39.73	1.8281	8 28 2.3	12.914
3	11 29 29.32	1.8250	8 15 6.7	12.938
4	11 31 18.73	1.8220	8 2 9.7	12.962
5	11 33 7.96	1.8191	7 49 11.3	12.984
6	11 34 57.02	1.8163	7 36 11.6	13.006
7	11 36 45.91	1.8135	7 23 10.6	13.027
8	11 38 34.64	1.8107	7 10 8.4	13.048
9	11 40 23.20	1.8081	6 57 4.9	13.068
10	11 42 11.61	1.8056	6 44 0.2	13.087
11	11 43 59.87	1.8031	6 30 54.5	13.104
12	11 45 47.98	1.8007	6 17 47.7	13.121
13	11 47 35.95	1.7983	6 4 39.9	13.138
14	11 49 23.78	1.7960	5 51 31.1	13.155
15	11 51 11.47	1.7938	5 38 21.3	13.170
16	11 52 59.03	1.7917	5 25 10.7	13.184
17	11 54 46.47	1.7896	5 11 59.2	13.198
18	11 56 33.78	1.7875	4 58 46.9	13.212
19	11 58 20.97	1.7856	4 45 33.8	13.224
20	12 0 8.05	1.7838	4 32 20.0	13.235
21	12 1 55.03	1.7821	4 19 5.6	13.246
22	12 3 41.90	1.7804	4 5 50.5	13.257
23	12 5 28.67	1.7787	3 52 34.8	13.266
24	12 7 15.34	1.7771	N. 3 39 18.6	13.274

TUESDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 7 15.34	1.7771	N. 3 39 18.6	13.274
1	12 9 1.92	1.7756	3 26 1.9	13.283
2	12 10 48.42	1.7742	3 12 44.7	13.291
3	12 12 34.83	1.7728	2 59 27.0	13.298
4	12 14 21.16	1.7716	2 46 8.9	13.304
5	12 16 7.42	1.7704	2 32 50.5	13.309
6	12 17 53.61	1.7692	2 19 31.9	13.313
7	12 19 39.73	1.7682	2 6 13.0	13.318
8	12 21 25.80	1.7673	1 52 53.8	13.323
9	12 23 11.81	1.7664	1 39 34.3	13.326
10	12 24 57.77	1.7656	1 26 14.7	13.327
11	12 26 43.68	1.7648	1 12 55.0	13.328
12	12 28 29.54	1.7640	0 59 35.3	13.329
13	12 30 15.36	1.7634	0 46 15.5	13.330
14	12 32 1.15	1.7630	0 32 55.7	13.329
15	12 33 46.92	1.7626	0 19 36.0	13.328
16	12 35 32.66	1.7621	N. 0 6 16.3	13.327
17	12 37 18.37	1.7618	S. 0 7 3.3	13.325
18	12 39 4.07	1.7616	0 20 22.7	13.322
19	12 40 49.76	1.7614	0 33 41.9	13.318
20	12 42 35.44	1.7613	0 47 0.9	13.314
21	12 44 21.11	1.7612	1 0 19.6	13.309
22	12 46 6.78	1.7612	1 13 38.0	13.304
23	12 47 52.46	1.7614	S. 1 26 56.1	13.298

WEDNESDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 49 38.15	1.7616	S. 1 40 13.8	13.292
1	12 51 23.85	1.7618	1 53 31.1	13.284
2	12 53 9.57	1.7622	2 6 47.9	13.276
3	12 54 55.32	1.7627	2 20 4.2	13.267
4	12 56 41.09	1.7632	2 33 20.0	13.258
5	12 58 26.90	1.7637	2 46 35.2	13.248
6	13 0 12.74	1.7644	2 59 49.8	13.238
7	13 1 58.62	1.7651	3 13 3.8	13.227
8	13 3 44.55	1.7658	3 26 17.1	13.215
9	13 5 30.52	1.7667	3 39 29.6	13.203
10	13 7 16.55	1.7677	3 52 41.4	13.190
11	13 9 2.64	1.7687	4 5 52.4	13.177
12	13 10 48.79	1.7697	4 19 2.6	13.162
13	13 12 35.00	1.7708	4 32 11.9	13.147
14	13 14 21.29	1.7721	4 45 20.3	13.132
15	13 16 7.66	1.7735	4 58 27.7	13.115
16	13 17 54.11	1.7748	5 11 34.1	13.098
17	13 19 40.64	1.7762	5 24 39.5	13.081
18	13 21 27.26	1.7778	5 37 43.9	13.064
19	13 23 13.98	1.7795	5 50 47.2	13.045
20	13 25 0.80	1.7811	6 3 49.3	13.025
21	13 26 47.71	1.7828	6 16 50.2	13.005
22	13 28 34.73	1.7847	6 29 49.9	12.984
23	13 30 21.87	1.7866	6 42 48.3	12.963
24	13 32 9.12	1.7885	S. 6 55 45.4	12.941

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 32 9.12	1.7885	S. 6 55 45.4	12.941
1	13 33 56.49	1.7906	7 8 41.2	12.918
2	13 35 43.99	1.7927	7 21 35.6	12.895
3	13 37 31.61	1.7948	7 34 28.6	12.872
4	13 39 19.37	1.7971	7 47 20.2	12.847
5	13 41 7.27	1.7995	8 0 10.2	12.821
6	13 42 55.31	1.8019	8 12 58.7	12.795
7	13 44 43.50	1.8044	8 25 45.6	12.768
8	13 46 31.84	1.8069	8 38 30.9	12.741
9	13 48 20.33	1.8095	8 51 14.5	12.713
10	13 50 8.98	1.8123	9 3 56.4	12.684
11	13 51 57.80	1.8151	9 16 36.6	12.655
12	13 53 46.79	1.8179	9 29 15.0	12.624
13	13 55 35.95	1.8208	9 41 51.5	12.593
14	13 57 25.29	1.8238	9 54 26.2	12.562
15	13 59 14.81	1.8268	10 6 59.0	12.530
16	14 1 4.51	1.8300	10 19 29.8	12.496
17	14 2 54.41	1.8332	10 31 58.5	12.462
18	14 4 44.50	1.8365	10 44 25.2	12.427
19	14 6 34.79	1.8399	10 56 49.8	12.392
20	14 8 25.29	1.8433	11 9 12.2	12.356
21	14 10 15.99	1.8467	11 21 32.5	12.320
22	14 12 6.90	1.8503	11 33 50.6	12.282
23	14 13 58.03	1.8540	S. 11 46 6.3	12.243

FRIDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 15 49.38	1.8577	S. 11 58 19.7	12.203
1	14 17 40.95	1.8615	12 10 30.7	12.163
2	14 19 32.76	1.8654	12 22 39.3	12.123
3	14 21 24.80	1.8693	12 34 45.5	12.082
4	14 23 17.07	1.8732	12 46 49.1	12.039
5	14 25 9.59	1.8773	12 58 50.1	11.996
6	14 27 2.35	1.8814	13 10 48.6	11.952
7	14 28 55.36	1.8856	13 22 44.4	11.907
8	14 30 48.63	1.8899	13 34 37.4	11.860
9	14 32 42.15	1.8943	13 46 27.6	11.813
10	14 34 35.94	1.8987	13 58 15.0	11.766
11	14 36 29.99	1.9031	14 9 59.6	11.719
12	14 38 24.31	1.9076	14 21 41.3	11.670
13	14 40 18.90	1.9122	14 33 20.0	11.619
14	14 42 13.77	1.9169	14 44 55.6	11.568
15	14 44 8.93	1.9217	14 56 28.1	11.516
16	14 46 4.37	1.9264	15 7 57.5	11.463
17	14 48 0.10	1.9313	15 19 23.7	11.410
18	14 49 56.13	1.9362	15 30 46.7	11.356
19	14 51 52.45	1.9412	15 42 6.4	11.300
20	14 53 49.08	1.9463	15 53 22.7	11.243
21	14 55 46.01	1.9514	16 4 35.6	11.186
22	14 57 43.25	1.9566	16 15 45.0	11.127
23	14 59 40.80	1.9618	16 26 50.9	11.067
24	15 1 38.66	1.9670	S. 16 37 53.1	11 007

SATURDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 1 38.66	1.9670	S. 16 37 53.1	11.007
1	15 3 36.84	1.9724	16 48 51.7	10.946
2	15 5 35.35	1.9778	16 59 46.6	10.884
3	15 7 34.18	1.9832	17 10 37.8	10.821
4	15 9 33.34	1.9888	17 21 25.1	10.756
5	15 11 32.84	1.9945	17 32 8.5	10.691
6	15 13 32.68	2.0002	17 42 48.0	10.625
7	15 15 32.86	2.0058	17 53 23.5	10.557
8	15 17 33.38	2.0115	18 3 54.9	10.488
9	15 19 34.24	2.0173	18 14 22.1	10.418
10	15 21 35.45	2.0232	18 24 45.1	10.348
11	15 23 37.02	2.0291	18 35 3.9	10.277
12	15 25 38.94	2.0350	18 45 18.4	10.205
13	15 27 41.22	2.0410	18 55 28.5	10.131
14	15 29 43.86	2.0470	19 5 34.1	10.055
15	15 31 46.86	2.0531	19 15 35.1	9.979
16	15 33 50.23	2.0593	19 25 31.5	9.902
17	15 35 53.97	2.0655	19 35 23.3	9.824
18	15 37 58.09	2.0717	19 45 10.4	9.745
19	15 40 2.58	2.0780	19 54 52.7	9.664
20	15 42 7.45	2.0842	20 4 30.1	9.582
21	15 44 12.69	2.0905	20 14 2.5	9.498
22	15 46 18.31	2.0969	20 23 29.9	9.414
23	15 48 24.32	2.1034	S. 20 32 52.2	9.329

SUNDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 50 30.72	2.1099	S. 20 42 9.4	9.243
1	15 52 37.51	2.1163	20 51 21.4	9.156
2	15 54 44.68	2.1227	21 0 28.1	9.067
3	15 56 52.24	2.1292	21 9 29.4	8.976
4	15 59 0.19	2.1358	21 18 25.2	8.885
5	16 1 8.54	2.1425	21 27 15.6	8.793
6	16 3 17.29	2.1491	21 36 0.4	8.699
7	16 5 26.44	2.1557	21 44 39.5	8.604
8	16 7 35.98	2.1623	21 53 12.9	8.508
9	16 9 45.92	2.1690	22 1 40.5	8.411
10	16 11 56.26	2.1757	22 10 2.2	8.312
11	16 14 7.01	2.1825	22 18 18.0	8.212
12	16 16 18.16	2.1892	22 26 27.7	8.111
13	16 18 29.71	2.1959	22 34 31.3	8.008
14	16 20 41.67	2.2026	22 42 28.7	7.905
15	16 22 54.03	2.2093	22 50 19.9	7.800
16	16 25 6.79	2.2161	22 58 4.7	7.693
17	16 27 19.96	2.2228	23 5 43.1	7.586
18	16 29 33.53	2.2296	23 13 15.0	7.477
19	16 31 47.51	2.2363	23 20 40.3	7.367
20	16 34 1.89	2.2431	23 27 59.0	7.256
21	16 36 16.68	2.2498	23 35 11.0	7.143
22	16 38 31.87	2.2566	23 42 16.2	7.029
23	16 40 47.47	2.2633	23 49 14.5	6.913
24	16 43 3.47	2.2700	S. 23 56 5.8	6.797

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 25.					**WEDNESDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	16 43 3.47	2.2700	S.23 56 5.8	6.797	0	18 38 50.75	2.5242	S.26 44 41.8	0.191
1	16 45 19.87	2.2767	24 2 50.1	6.679	1	18 41 22.29	2.5271	26 44 25.3	0.359
2	16 47 36.67	2.2833	24 9 27.3	6.560	2	18 43 54.00	2.5299	26 43 58.7	0.528
3	16 49 53.87	2.2900	24 15 57.3	6.439	3	18 46 25.88	2.5326	26 43 22.0	0.697
4	16 52 11.47	2.2966	24 22 20.0	6.317	4	18 48 57.91	2.5350	26 42 35.1	0.867
5	16 54 29.46	2.3032	24 28 35.4	6.195	5	18 51 30.08	2.5372	26 41 37.9	1.038
6	16 56 47.85	2.3097	24 34 43.4	6.071	6	18 54 2.38	2.5394	26 40 30.5	1.209
7	16 59 6.63	2.3162	24 40 43.9	5.945	7	18 56 34.81	2.5416	26 39 12.9	1.380
8	17 1 25.80	2.3227	24 46 36.8	5.817	8	18 59 7.37	2.5436	26 37 44.9	1.552
9	17 3 45.36	2.3292	24 52 22.0	5.689	9	19 1 40.04	2.5453	26 36 6.6	1.724
10	17 6 5.31	2.3357	24 57 59.5	5.560	10	19 4 12.81	2.5470	26 34 18.0	1.897
11	17 8 25.64	2.3420	25 3 29.2	5.429	11	19 6 45.68	2.5486	26 32 19.0	2.069
12	17 10 46.35	2.3483	25 8 51.0	5.297	12	19 9 18.64	2.5499	26 30 9.7	2.242
13	17 13 7.44	2.3546	25 14 4.9	5.164	13	19 11 51.67	2.5511	26 27 50.0	2.415
14	17 15 28.90	2.3608	25 19 10.7	5.029	14	19 14 24.77	2.5522	26 25 19.9	2.588
15	17 17 50.74	2.3671	25 24 8.4	4.894	15	19 16 57.94	2.5532	26 22 39.4	2.762
16	17 20 12.95	2.3732	25 28 58.0	4.757	16	19 19 31.16	2.5540	26 19 48.5	2.935
17	17 22 35.52	2.3792	25 33 39.3	4.618	17	19 22 4.42	2.5547	26 16 47.2	3.108
18	17 24 58.46	2.3852	25 38 12.2	4.478	18	19 24 37.72	2.5552	26 13 35.5	3.282
19	17 27 21.75	2.3912	25 42 36.7	4.338	19	19 27 11.04	2.5556	26 10 13.4	3.455
20	17 29 45.40	2.3971	25 46 52.8	4.197	20	19 29 44.39	2.5559	26 6 40.9	3.629
21	17 32 9.40	2.4029	25 51 0.4	4.055	21	19 32 17.75	2.5560	26 2 57.9	3.803
22	17 34 33.74	2.4086	25 54 59.4	3.911	22	19 34 51.11	2.5559	25 59 4.5	3.976
23	17 36 58.43	2.4143	S.25 58 49.7	3.765	23	19 37 24.46	2.5557	S.25 55 0.8	4.148
	TUESDAY 26.					**THURSDAY 28.**			
0	17 39 23.46	2.4199	S.26 2 31.2	3.618	0	19 39 57.80	2.5555	S.25 50 46.8	4.320
1	17 41 48.82	2.4253	26 6 3.9	3.471	1	19 42 31.12	2.5551	25 46 22.4	4.493
2	17 44 14.50	2.4307	26 9 27.7	3.322	2	19 45 4.41	2.5545	25 41 47.6	4.666
3	17 46 40.51	2.4361	26 12 42.6	3.173	3	19 47 37.66	2.5538	25 37 2.4	4.839
4	17 49 6.84	2.4414	26 15 48.5	3.022	4	19 50 10.87	2.5530	25 32 6.9	5.011
5	17 51 33.48	2.4465	26 18 45.2	2.869	5	19 52 44.02	2.5520	25 27 1.1	5.182
6	17 54 0.42	2.4515	26 21 32.8	2.716	6	19 55 17.11	2.5509	25 21 45.1	5.353
7	17 56 27.66	2.4565	26 24 11.2	2.562	7	19 57 50.13	2.5497	25 16 18.8	5.523
8	17 58 55.20	2.4615	26 26 40.3	2.408	8	20 0 23.07	2.5483	25 10 42.3	5.693
9	18 1 23.04	2.4663	26 29 0.2	2.253	9	20 2 55.93	2.5469	25 4 55.6	5.863
10	18 3 51.16	2.4709	26 31 10.7	2.096	10	20 5 28.70	2.5453	24 58 58.7	6.032
11	18 6 19.55	2.4753	26 33 11.7	1.937	11	20 8 1.37	2.5436	24 52 51.7	6.201
12	18 8 48.20	2.4797	26 35 3.2	1.778	12	20 10 33.93	2.5417	24 46 34.6	6.369
13	18 11 17.12	2.4841	26 36 45.1	1.619	13	20 13 6.37	2.5397	24 40 7.4	6.536
14	18 13 46.30	2.4885	26 38 17.5	1.459	14	20 15 38.70	2.5377	24 33 30.3	6.702
15	18 16 15.74	2.4927	26 39 40.2	1.297	15	20 18 10.90	2.5355	24 26 43.2	6.868
16	18 18 45.42	2.4967	26 40 53.2	1.135	16	20 20 42.96	2.5332	24 19 46.2	7.033
17	18 21 15.34	2.5005	26 41 56.4	0.972	17	20 23 14.89	2.5309	24 12 39.3	7.198
18	18 23 45.48	2.5042	26 42 49.8	0.808	18	20 25 46.67	2.5284	24 5 22.5	7.362
19	18 26 15.84	2.5079	26 43 33.4	0.643	19	20 28 18.29	2.5258	23 57 55.9	7.524
20	18 28 46.42	2.5115	26 44 7.0	0.477	20	20 30 49.76	2.5231	23 50 19.6	7.685
21	18 31 17.22	2.5149	26 44 30.7	0.312	21	20 33 21.06	2.5202	23 42 33.7	7.845
22	18 33 48.21	2.5181	26 44 44.5	− 0.146	22	20 35 52.18	2.5173	23 34 38.2	8.005
23	18 36 19.39	2.5212	26 44 48.2	+ 0.022	23	20 38 23.13	2.5143	23 26 33.1	8.164
24	18 38 50.75	2.5242	S.26 44 41.8	0.191	24	20 40 53.90	2.5112	S.23 18 18.5	8.323

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 40 53.90	2.5112	S. 23 18 18.5	8.323
1	20 43 24.48	2.5080	23 9 54.4	8.480
2	20 45 54.86	2.5047	23 1 20.9	8.635
3	20 48 25.04	2.5013	22 52 38.2	8.789
4	20 50 55.02	2.4979	22 43 46.2	8.943
5	20 53 24.79	2.4944	22 34 45.0	9.096
6	20 55 54.35	2.4908	22 25 34.7	9.247
7	20 58 23.69	2.4872	22 16 15.3	9.397
8	21 0 52.81	2.4834	22 6 47.0	9.546
9	21 3 21.70	2.4796	21 57 9.8	9.694
10	21 5 50.36	2.4757	21 47 23.7	9.841
11	21 8 18.78	2.4718	21 37 28.9	9.985
12	21 10 46.97	2.4678	21 27 25.5	10.129
13	21 13 14.92	2.4637	21 17 13.5	10.272
14	21 15 42.62	2.4596	21 6 52.9	10.413
15	21 18 10.07	2.4554	20 56 23.9	10.552
16	21 20 37.27	2.4513	20 45 46.6	10.691
17	21 23 4.22	2.4471	20 35 1.0	10.828
18	21 25 30.92	2.4428	20 24 7.2	10.963
19	21 27 57.36	2.4384	20 13 5.4	11.097
20	21 30 23.53	2.4340	20 1 55.6	11.230
21	21 32 49.44	2.4297	19 50 37.8	11.362
22	21 35 15.09	2.4253	19 39 12.2	11.491
23	21 37 40.47	2.4208	S. 19 27 38.9	11.618

SATURDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 40 5.58	2.4163	S. 19 15 58.0	11.745
1	21 42 30.42	2.4118	19 4 9.5	11.870
2	21 44 54.99	2.4073	18 52 13.6	11.993
3	21 47 19.29	2.4027	18 40 10.3	12.115
4	21 49 43.31	2.3981	18 27 59.8	12.235
5	21 52 7.06	2.3936	18 15 42.1	12.353
6	21 54 30.54	2.3890	18 3 17.4	12.470
7	21 56 53.74	2.3843	17 50 45.7	12.586
8	21 59 16.66	2.3797	17 38 7.1	12.699
9	22 1 39.31	2.3752	17 25 21.8	12.811
10	22 4 1.68	2.3706	17 12 29.8	12.922
11	22 6 23.78	2.3660	16 59 31.2	13.031
12	22 8 45.60	2.3614	16 46 26.1	13.137
13	22 11 7.15	2.3568	16 33 14.7	13.242
14	22 13 28.42	2.3522	16 19 57.0	13.346
15	22 15 49.42	2.3477	16 6 33.2	13.447
16	22 18 10.15	2.3432	15 53 3.3	13.548
17	22 20 30.60	2.3386	15 39 27.4	13.647
18	22 22 50.78	2.3341	15 25 45.7	13.743
19	22 25 10.69	2.3296	15 11 58.3	13.837
20	22 27 30.33	2.3252	14 58 5.2	13.931
21	22 29 49.71	2.3207	14 44 6.6	14.022
22	22 32 8.82	2.3163	14 30 2.6	14.112
23	22 34 27.67	2.3119	14 15 53.2	14.200
24	22 36 46.25	2.3075	S. 14 1 38.6	14.286

SUNDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 36 46.25	2.3075	S. 14 1 38.6	14.286
1	22 39 4.57	2.3032	13 47 18.9	14.370
2	22 41 22.64	2.2990	13 32 54.2	14.452
3	22 43 40.45	2.2948	13 18 24.6	14.533
4	22 45 58.01	2.2906	13 3 50.2	14.612
5	22 48 15.32	2.2864	12 49 11.1	14.690
6	22 50 32.37	2.2822	12 34 27.4	14.766
7	22 52 49.18	2.2782	12 19 39.2	14.839
8	22 55 5.75	2.2741	12 4 46.7	14.911
9	22 57 22.07	2.2701	11 49 49.9	14.982
10	22 59 38.16	2.2662	11 34 48.9	15.050
11	23 1 54.01	2.2623	11 19 43.9	15.116
12	23 4 9.63	2.2584	11 4 35.0	15.181
13	23 6 25.02	2.2546	10 49 22.2	15.244
14	23 8 40.18	2.2508	10 34 5.7	15.305
15	23 10 55.12	2.2472	10 18 45.6	15.364
16	23 13 9.84	2.2436	10 3 22.0	15.422
17	23 15 24.35	2.2400	9 47 54.9	15.479
18	23 17 38.64	2.2364	9 32 24.5	15.533
19	23 19 52.72	2.2330	9 16 50.9	15.586
20	23 22 6.60	2.2296	9 1 14.2	15.636
21	23 24 20.27	2.2262	8 45 34.6	15.684
22	23 26 33.74	2.2229	8 29 52.1	15.732
23	23 28 47.02	2.2198	S. 8 14 6.8	15.777

MONDAY, FEBBRUARY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 31 0.12	2.2167	S. 7 58 18.8	15.821

PHASES OF THE MOON.

		d	h	m
☽ First Quarter . .	Jan.	6	13	12.1
○ Full Moon		13	15	26.7
☾ Last Quarter		21	15	42 6
● New Moon		29	4	38.5

		d	h
☾ Perigee	Jan.	5	5.1
☾ Apogee		20	3.2
☾ Perigee		31	21.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	17° 48′ 31″	2808	19° 22′ 49″	2788	20° 57′ 33″	2771	22° 32′ 39″	2756
	α Pegasi	E.	58 22 52	2964	56 51 54	2979	55 21 15	2997	53 50 59	3019
	α Arietis	E.	98 58 7	2484	97 16 31	2476	95 34 44	2467	93 52 45	2460
2	Sun	W.	30 32 35	2699	32 9 16	2691	33 46 8	2684	35 23 10	2677
	α Pegasi	E.	46 27 39	3183	45 1 9	3231	43 35 36	3286	42 11 8	3349
	α Arietis	E.	85 20 24	2430	83 37 32	2425	81 54 33	2421	80 11 28	2417
3	Sun	W.	43 30 24	2650	45 8 11	2646	46 46 4	2643	48 24 1	2639
	α Arietis	E.	71 35 1	2407	69 51 36	2406	68 8 10	2406	66 24 44	2407
	Aldebaran	E.	101 46 51	2336	100 1 44	2333	98 16 33	2331	96 31 18	2328
4	Sun	W.	56 34 45	2628	58 13 2	2626	59 51 21	2626	61 29 41	2624
	α Arietis	E.	57 48 2	2419	56 4 54	2423	54 21 52	2429	52 38 58	2434
	Aldebaran	E.	87 44 14	2320	85 58 43	2318	84 13 10	2318	82 27 37	2318
5	Sun	W.	69 41 35	2624	71 19 58	2624	72 58 20	2624	74 36 42	2626
	α Arietis	E.	44 7 8	2482	42 25 30	2497	40 44 12	2513	39 3 17	2532
	Aldebaran	E.	73 39 54	2320	71 54 24	2322	70 8 56	2323	68 23 30	2324
6	Sun	W.	82 48 9	2632	84 26 21	2634	86 4 30	2635	87 42 37	2637
	Fomalhaut	W.	39 11 18	2740	40 47 5	2711	42 23 30	2686	44 0 29	2663
	Jupiter	W.	24 9 46	2402	25 53 18	2398	27 36 56	2395	29 20 38	2392
	Aldebaran	E.	59 37 1	2336	57 51 54	2339	56 6 52	2343	54 21 55	2346
	Pollux	E.	103 34 36	2300	101 48 36	2302	100 2 39	2303	98 16 44	2305
7	Sun	W.	95 52 30	2649	97 30 19	2652	99 8 4	2655	100 45 45	2657
	Fomalhaut	W.	52 11 47	2588	53 50 58	2578	55 30 23	2570	57 9 59	2562
	Jupiter	W.	37 59 40	2390	39 43 29	2391	41 27 16	2392	43 11 2	2394
	α Pegasi	W.	37 21 32	3552	38 40 59	3460	40 2 8	3380	41 24 47	3311
	Aldebaran	E.	45 38 41	2371	43 54 25	2377	42 10 17	2384	40 26 19	2391
	Pollux	E.	89 27 51	2315	87 42 14	2317	85 56 40	2320	84 11 10	2323
8	Sun	W.	108 53 7	2675	110 30 21	2678	112 7 31	2682	113 44 35	2686
	Fomalhaut	W.	65 30 4	2540	67 10 21	2538	68 50 41	2537	70 31 3	2537
	Jupiter	W.	51 49 11	2405	53 32 39	2407	55 16 4	2410	56 59 25	2413
	α Pegasi	W.	48 35 28	3067	50 4 18	3033	51 33 50	3003	53 3 59	2977
	Pollux	E.	75 24 40	2337	73 39 35	2341	71 54 35	2344	70 9 39	2348
	Regulus	E.	111 42 49	2350	109 58 2	2353	108 13 19	2355	106 28 40	2359
9	Fomalhaut	W.	78 52 51	2540	80 33 8	2543	82 13 21	2546	83 53 30	2549
	Jupiter	W.	65 34 58	2431	67 17 49	2435	69 0 34	2439	70 43 13	2443
	α Pegasi	W.	60 41 52	2883	62 14 32	2872	63 47 27	2861	65 20 36	2852
	Pollux	E.	61 26 23	2367	59 42 1	2372	57 57 46	2376	56 13 37	2381
	Regulus	E.	97 46 40	2377	96 2 32	2381	94 18 30	2385	92 34 34	2389
10	Fomalhaut	W.	92 12 53	2574	93 52 24	2580	95 31 47	2587	97 11 0	2593
	Jupiter	W.	79 14 50	2468	80 56 48	2474	82 38 38	2480	84 20 20	2485
	α Pegasi	W.	73 8 40	2827	74 42 33	2825	76 16 29	2825	77 50 25	2825
	α Arietis	W.	29 30 55	2775	31 5 56	2744	32 41 38	2719	34 17 53	2698
	Pollux	E.	47 34 39	2408	45 51 15	2413	44 7 59	2419	42 24 52	2426
	Regulus	E.	83 56 35	2415	82 13 22	2420	80 30 16	2426	78 47 18	2432

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	**Sun**	W.	24° 8′ 5″	2741	25° 43′ 50″	2729	27° 19′ 51″	2719	28° 56′ 6″	2708
	α Pegasi	E.	52 21 10	3043	50 51 51	3071	49 23 6	3103	47 55 0	3140
	α Arietis	E.	92 10 35	2453	90 28 16	2446	88 45 47	2440	87 3 9	2435
2	**Sun**	W.	37 0 21	2670	38 37 41	2665	40 15 8	2659	41 52 43	2655
	α Pegasi	E.	40 47 53	3421	39 26 0	3503	38 5 39	3598	36 47 2	3706
	α Arietis	E.	78 28 18	2415	76 45 4	2412	75 1 46	2410	73 18 25	2408
3	**Sun**	W.	50 2 3	2636	51 40 9	2634	53 18 18	2632	54 56 30	2629
	α Arietis	E.	64 41 19	2408	62 57 55	2410	61 14 34	2412	59 31 16	2415
	Aldebaran	E.	94 45 59	2325	93 0 36	2324	91 15 11	2322	89 29 43	2321
4	**Sun**	W.	63 8 3	2624	64 46 25	2624	66 24 48	2624	68 3 11	2623
	α Arietis	E.	50 56 12	2442	49 13 37	2450	47 31 13	2460	45 49 3	2470
	Aldebaran	E.	80 42 4	2318	78 56 31	2318	77 10 58	2319	75 25 26	2319
5	**Sun**	W.	76 15 2	2626	77 53 21	2627	79 31 39	2629	81 9 55	2630
	α Arietis	E.	37 22 48	2553	35 42 49	2578	34 3 24	2606	32 24 37	2638
	Aldebaran	E.	66 38 6	2326	64 52 45	2328	63 7 27	2331	61 22 12	2333
6	**Sun**	W.	89 20 42	2639	90 58 44	2642	92 36 42	2643	94 14 38	2646
	Fomalhaut	W.	45 37 59	2643	47 15 55	2627	48 54 13	2612	50 32 51	2599
	Jupiter	W.	31 4 24	2391	32 48 12	2390	34 32 1	2389	36 15 51	2390
	Aldebaran	E.	52 37 3	2350	50 52 17	2355	49 7 38	2360	47 23 6	2365
	Pollux	E.	96 30 52	2307	94 45 2	2309	92 59 15	2311	91 13 31	2313
7	**Sun**	W.	102 23 22	2660	104 0 55	2663	105 38 24	2667	107 15 48	2671
	Fomalhaut	W.	58 49 46	2556	60 29 41	2551	62 9 43	2547	63 49 51	2543
	Jupiter	W.	44 54 45	2396	46 38 26	2398	48 22 4	2400	50 5 39	2402
	α Pegasi	W.	42 48 46	3249	44 13 57	3195	45 40 12	3148	47 7 24	3105
	Aldebaran	E.	38 42 32	2400	36 58 57	2410	35 15 36	2420	33 32 30	2433
	Pollux	E.	82 25 44	2326	80 40 22	2328	78 55 4	2331	77 9 50	2334
8	**Sun**	W.	115 21 34	2690	116 58 27	2695	118 35 13	2700	120 11 53	2704
	Fomalhaut	W.	72 11 25	2536	73 51 48	2537	75 32 10	2538	77 12 31	2538
	Jupiter	W.	58 42 41	2416	60 25 53	2419	62 9 0	2423	63 52 2	2427
	α Pegasi	W.	54 34 41	2964	56 5 52	2939	57 37 30	2914	59 9 31	2898
	Pollux	E.	68 24 49	2351	66 40 4	2355	64 55 25	2359	63 10 51	2363
	Regulus	E.	104 44 6	2362	102 59 37	2366	101 15 13	2369	99 30 54	2373
9	Fomalhaut	W.	85 33 35	2553	87 13 34	2558	88 53 27	2562	90 33 14	2568
	Jupiter	W.	72 25 46	2448	74 8 12	2453	75 50 32	2458	77 32 45	2463
	α Pegasi	W.	66 53 57	2844	68 27 28	2838	70 1 6	2834	71 34 50	2829
	Pollux	E.	54 29 35	2386	52 45 40	2391	51 1 52	2396	49 18 12	2401
	Regulus	E.	90 50 44	2394	89 7 1	2399	87 23 25	2404	85 39 56	2410
10	Fomalhaut	W.	98 50 4	2601	100 28 57	2610	102 7 39	2618	103 46 9	2627
	Jupiter	W.	86 1 54	2492	87 43 19	2498	89 24 35	2504	91 5 42	2511
	α Pegasi	W.	79 24 20	2827	80 58 13	2829	82 32 3	2832	84 5 49	2836
	α Arietis	W.	35 54 36	2662	37 31 40	2669	39 9 2	2658	40 46 38	2651
	Pollux	E.	40 41 54	2433	38 59 6	2440	37 16 28	2447	35 34 0	2454
	Regulus	E.	77 4 29	2438	75 21 49	2445	73 39 18	2451	71 56 56	2458

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
11	Jupiter	W.	92 46 40	2518	94 27 28	2525	96 8 6	2533	97 48 33	2540
	α Pegasi	W.	85 39 30	2842	87 13 4	2847	88 46 31	2854	90 19 49	2861
	α Arietis	W.	42 24 24	2644	44 2 19	2639	45 40 21	2636	47 18 27	2634
	Pollux	E.	33 51 42	2462	32 9 36	2470	30 27 41	2479	28 45 58	2489
	Regulus	E.	70 14 44	2465	68 32 42	2473	66 50 51	2480	65 9 10	2489
	Saturn	E.	101 58 6	2450	100 15 43	2458	98 33 30	2465	96 51 27	2472
12	α Arietis	W.	55 29 5	2640	57 7 5	2644	58 45 0	2649	60 22 49	2654
	Regulus	E.	56 43 40	2531	55 3 10	2541	53 22 54	2551	51 42 52	2561
	Saturn	E.	88 23 51	2512	86 42 54	2520	85 2 9	2529	83 21 36	2538
	Spica	E.	110 46 35	2528	109 6 1	2536	107 25 38	2545	105 45 27	2553
13	α Arietis	W.	68 29 57	2687	70 6 54	2695	71 43 41	2703	73 20 17	2712
	Aldebaran	W.	37 50 44	2660	39 28 17	2666	41 5 42	2672	42 42 59	2678
	Regulus	E.	43 26 15	2616	41 47 42	2628	40 9 25	2640	38 31 25	2654
	Saturn	E.	75 2 0	2585	73 22 45	2595	71 43 43	2606	70 4 56	2615
	Spica	E.	97 27 39	2601	95 48 45	2610	94 10 4	2621	92 31 37	2631
14	α Arietis	W.	81 20 14	2760	82 55 35	2770	84 30 42	2781	86 5 35	2792
	Aldebaran	W.	50 47 4	2718	52 23 20	2727	53 59 24	2736	55 35 16	2746
	Saturn	E.	61 54 31	2669	60 17 10	2681	58 40 4	2692	57 3 13	2703
	Spica	E.	84 22 56	2685	82 45 56	2695	81 9 10	2707	79 32 40	2719
15	α Arietis	W.	93 56 23	2848	95 29 48	2861	97 2 57	2873	98 35 51	2885
	Aldebaran	W.	63 31 20	2797	65 5 52	2807	66 40 11	2818	68 14 16	2828
	Saturn	E.	49 2 45	2760	47 27 25	2772	45 52 20	2783	44 17 30	2795
	Spica	E.	71 33 57	2777	69 58 59	2788	68 24 16	2800	66 49 48	2812
	Mars	E.	102 59 35	2980	101 28 57	2992	99 58 34	3004	98 28 26	3017
16	Aldebaran	W.	76 1 12	2882	77 33 54	2893	79 6 22	2903	80 38 37	2913
	Pollux	W.	31 49 6	2863	33 22 12	2874	34 55 4	2884	36 27 43	2894
	Saturn	E.	36 27 6	2852	34 53 46	2863	33 20 40	2875	31 47 49	2887
	Spica	E.	59 1 21	2871	57 28 25	2883	55 55 44	2894	54 23 18	2905
	Mars	E.	91 1 30	3075	89 32 50	3087	88 4 25	3098	86 36 13	3110
	Antares	E.	104 52 47	2858	103 19 34	2869	101 46 36	2880	100 13 52	2891
17	Aldebaran	W.	88 16 36	2964	89 47 34	2973	91 18 20	2983	92 48 54	2992
	Pollux	W.	44 7 55	2942	45 39 21	2950	47 10 36	2960	48 41 39	2969
	Spica	E.	46 44 44	2962	45 13 44	2973	43 42 58	2985	42 12 26	2995
	Mars	E.	79 18 35	3163	77 51 41	3173	76 25 0	3183	74 58 31	3193
	Antares	E.	92 33 29	2942	91 2 3	2950	89 30 48	2960	87 59 45	2969
18	Pollux	W.	56 14 15	3009	57 44 17	3016	59 14 10	3022	60 43 55	3030
	Regulus	W.	20 18 11	3113	21 46 5	3108	23 14 5	3104	24 42 10	3101
	Spica	E.	34 43 8	3051	33 13 58	3061	31 45 1	3073	30 16 18	3085
	Mars	E.	67 48 49	3236	66 23 23	3244	64 58 6	3252	63 32 58	3259
	Antares	E.	80 27 16	3010	78 57 16	3018	77 27 26	3025	75 57 44	3032
	Sun	E.	129 31 39	3410	128 9 34	3417	126 47 37	3424	125 25 48	3431
19	Pollux	W.	68 10 47	3056	69 39 51	3060	71 8 49	3064	72 37 43	3068
	Regulus	W.	32 3 1	3100	33 31 11	3101	34 59 20	3101	36 27 28	3101
	Mars	E.	56 29 11	3288	55 4 45	3293	53 40 25	3296	52 16 9	3300

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
11	JUPITER	W.	99° 28′ 50″	2548	101° 8′ 56″	2556	102° 48′ 51″	2565	104° 28′ 34″	2573
	α Pegasi	W.	91 52 58	2869	93 25 56	2879	94 58 42	2889	96 31 15	2899
	α Arietis	W.	48 56 36	2634	50 34 45	2634	52 12 54	2635	53 51 1	2638
	Pollux	E.	27 4 29	2498	25 23 13	2509	23 42 12	2520	22 1 27	2532
	Regulus	E.	63 27 41	2497	61 46 23	2504	60 5 16	2514	58 24 22	2522
	SATURN	E.	95 9 34	2480	93 27 52	2487	91 46 20	2495	90 5 0	2503
12	α Arietis	W.	62 0 31	2659	63 38 6	2666	65 15 32	2672	66 52 49	2679
	Regulus	E.	50 3 3	2572	48 23 29	2582	46 44 9	2593	45 5 4	2604
	SATURN	E.	81 41 15	2547	80 1 7	2556	78 21 11	2566	76 41 29	2575
	Spica	E.	104 5 28	2563	102 25 42	2572	100 46 8	2581	99 6 47	2591
13	α Arietis	W.	74 56 41	2721	76 32 53	2730	78 8 53	2740	79 44 40	2750
	Aldebaran	W.	44 20 8	2686	45 57 7	2692	47 33 57	2701	49 10 36	2709
	Regulus	E.	36 53 43	2667	35 16 19	2681	33 39 14	2695	32 2 28	2711
	SATURN	E.	68 26 22	2626	66 48 2	2637	65 9 57	2648	63 32 7	2658
	Spica	E.	90 53 24	2641	89 15 25	2652	87 37 41	2663	86 0 11	2674
14	α Arietis	W.	87 40 14	2803	89 14 38	2814	90 48 48	2825	92 22 43	2837
	Aldebaran	W.	57 10 55	2756	58 46 21	2766	60 21 34	2775	61 56 34	2786
	SATURN	E.	55 26 37	2714	53 50 16	2726	52 14 11	2737	50 38 20	2749
	Spica	E.	77 56 25	2730	76 20 25	2741	74 44 40	2753	73 9 11	2765
15	α Arietis	W.	100 8 29	2897	101 40 52	2909	103 12 59	2922	104 44 50	2935
	Aldebaran	W.	69 48 7	2839	71 21 44	2850	72 55 7	2861	74 28 16	2871
	SATURN	E.	42 42 55	2806	41 8 35	2818	39 34 31	2829	38 0 41	2841
	Spica	E.	65 15 36	2824	63 41 39	2836	62 7 58	2848	60 34 32	2859
	MARS	E.	96 58 34	3028	95 28 56	3040	93 59 33	3052	92 30 24	3064
16	Aldebaran	W.	82 10 39	2924	83 42 27	2934	85 14 3	2944	86 45 26	2954
	Pollux	W.	38 0 10	2903	39 32 25	2913	41 4 27	2923	42 36 17	2932
	SATURN	E.	30 15 13	2898	28 42 51	2909	27 10 43	2920	25 38 49	2931
	Spica	E.	52 51 6	2917	51 19 9	2928	49 47 26	2940	48 15 58	2951
	MARS	E.	85 8 15	3120	83 40 30	3132	82 12 59	3143	80 45 41	3153
	Antares	E.	98 41 21	2901	97 9 3	2912	95 36 59	2922	94 5 8	2931
17	Aldebaran	W.	94 19 17	3001	95 49 28	3009	97 19 29	3018	98 49 19	3026
	Pollux	W.	50 12 31	2977	51 43 12	2985	53 13 43	2993	54 44 4	3001
	Spica	E.	40 42 7	3006	39 12 2	3017	37 42 10	3028	36 12 32	3039
	MARS	E.	73 32 13	3202	72 6 6	3211	70 40 10	3220	69 14 24	3229
	Antares	E.	86 28 54	2978	84 58 14	2986	83 27 44	2995	81 57 25	3003
18	Pollux	W.	62 13 31	3035	63 43 0	3041	65 12 22	3046	66 41 38	3052
	Regulus	W.	26 10 18	3100	27 38 28	3099	29 6 39	3099	30 34 50	3099
	Spica	E.	28 47 50	3097	27 19 37	3110	25 51 39	3124	24 23 58	3138
	MARS	E.	62 7 58	3265	60 43 6	3271	59 18 21	3277	57 53 43	3282
	Antares	E.	74 28 11	3039	72 58 46	3044	71 29 28	3050	70 0 17	3056
	SUN	E.	124 4 7	3438	122 42 33	3443	121 21 5	3449	119 59 44	3454
19	Pollux	W.	74 6 32	3070	75 35 18	3073	77 4 1	3074	78 32 42	3077
	Regulus	W.	37 55 36	3102	39 23 43	3103	40 51 49	3103	42 19 55	3103
	MARS	E.	50 51 58	3303	49 27 50	3306	48 3 46	3308	46 39 44	3310

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L of Diff.	IXh.	P. L. of Diff.
19	Antares	E.	68° 31′ 13″	3060	67° 2′ 15″	3065	65° 33′ 22″	3069	64° 4′ 34″	3072
	Sun	E.	118 38 28	3459	117 17 18	3463	115 56 13	3468	114 35 13	3471
20	Pollux	W.	80 1 20	3078	81 29 57	3078	82 58 33	3078	84 27 9	3078
	Regulus	W.	43 48 1	3102	45 16 8	3101	46 44 16	3101	48 12 25	3099
	Mars	E.	45 15 44	3311	43 51 45	3313	42 27 48	3313	41 3 51	3313
	Antares	E.	56 41 29	3084	55 13 0	3085	53 44 32	3086	52 16 5	3086
	Sun	E.	107 50 57	3480	106 30 11	3481	105 9 26	3481	103 48 41	3481
21	Pollux	W.	91 50 25	3069	93 19 12	3066	94 48 3	3063	96 16 58	3058
	Regulus	W.	55 33 45	3086	57 2 12	3082	58 30 43	3078	59 59 20	3073
	Saturn	W.	23 50 2	3069	25 18 49	3065	26 47 41	3060	28 16 39	3056
	Mars	E.	34 3 53	3304	32 39 46	3301	31 15 36	3297	29 51 21	3294
	Antares	E.	44 53 42	3080	43 25 8	3078	41 56 32	3075	40 27 52	3072
	Sun	E.	97 4 39	3471	95 43 43	3468	94 22 43	3464	93 1 39	3459
22	Pollux	W.	103 43 5	3030	105 12 40	3023	106 42 24	3015	108 12 18	3008
	Regulus	W.	67 24 2	3043	68 53 22	3035	70 22 51	3027	71 52 30	3018
	Saturn	W.	35 43 15	3023	37 12 59	3016	38 42 52	3008	40 12 55	2999
	Sun	E.	86 14 47	3429	84 53 3	3421	83 31 10	3413	82 9 8	3404
23	Regulus	W.	79 23 32	2970	80 54 22	2960	82 25 25	2949	83 56 42	2937
	Saturn	W.	47 45 59	2951	49 17 13	2940	50 48 41	2928	52 20 24	2916
	Spica	W.	25 31 5	3031	27 0 39	3013	28 30 36	2996	30 0 54	2978
	Sun	E.	75 16 18	3353	73 53 8	3342	72 29 45	3331	71 6 9	3318
24	Regulus	W.	91 36 59	2873	93 9 52	2859	94 43 3	2845	96 16 32	2831
	Saturn	W.	60 2 56	2853	61 36 15	2839	63 9 52	2825	64 43 47	2811
	Spica	W.	37 37 40	2897	39 10 3	2881	40 42 46	2865	42 15 50	2848
	Sun	E.	64 4 23	3251	62 39 14	3236	61 13 48	3221	59 48 4	3207
25	Saturn	W.	72 38 14	2734	74 14 9	2719	75 50 24	2703	77 27 0	2687
	Spica	W.	50 6 29	2766	51 41 42	2749	53 17 17	2732	54 5 14	2716
	Sun	E.	52 34 54	3129	51 7 20	3113	49 39 26	3097	48 11 13	3081
26	Saturn	W.	85 35 29	2605	87 14 17	2588	88 53 28	2572	90 33 2	2556
	Spica	W.	62 58 37	2631	64 36 50	2614	66 15 26	2597	67 54 25	2580
	Mars	W.	24 32 34	2829	26 6 24	2811	27 40 37	2794	29 15 13	2776
	Sun	E.	40 45 12	3002	39 15 2	2986	37 44 32	2972	36 13 44	2957
27	Spica	W.	76 15 8	2497	77 56 25	2482	79 38 4	2466	81 20 5	2450
	Mars	W.	37 13 58	2690	38 50 51	2673	40 28 7	2657	42 5 45	2640
	Antares	W.	30 22 7	2508	32 3 9	2491	33 44 35	2473	35 26 26	2456
	Sun	E.	28 35 24	2896	27 3 0	2887	25 30 24	2880	23 57 39	2876
30	Sun	W.	11 54 54	2862	13 28 2	2782	15 2 54	2721	16 39 6	2675
	α Arietis	E.	76 23 20	2286	74 37 0	2281	72 50 33	2277	71 4 0	2274
	Aldebaran	E.	106 41 38	2227	104 53 51	2220	103 5 54	2214	101 17 47	2208
31	Sun	W.	24 51 43	2558	26 31 36	2546	28 11 45	2536	29 52 8	2528
	α Arietis	E.	62 10 27	2270	60 23 44	2272	58 37 3	2275	56 50 27	2279
	Aldebaran	E.	92 15 23	2189	90 26 39	2186	88 37 51	2185	86 49 1	2184

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
19	Antares	E.	62° 35′ 50″	3075	61° 7′ 10″	3078	59° 38′ 34″	3080	58° 10′ 0″	3082
	Sun	E.	113 14 16	3474	111 53 23	3476	110 32 32	3479	109 11 44	3480
20	Pollux	W.	85 55 45	3078	87 24 22	3076	88 53 1	3074	90 21 42	3073
	Regulus	W.	49 40 36	3097	51 8 49	3096	52 37 4	3092	54 5 23	3090
	Mars	E.	39 39 54	3312	38 15 56	3311	36 51 57	3309	35 27 56	3307
	Antares	E.	50 47 38	3086	49 19 11	3085	47 50 43	3083	46 22 13	3082
	Sun	E.	102 27 56	3480	101 7 10	3479	99 46 22	3477	98 25 32	3474
21	Pollux	W.	97 45 59	3054	99 15 5	3048	100 44 18	3043	102 43 38	3037
	Regulus	W.	61 28 2	3068	62 56 51	3062	64 25 47	3056	65 54 51	3050
	Saturn	W.	29 45 43	3050	31 14 54	3043	32 44 13	3037	34 13 40	3030
	Mars	E.	28 27 2	3288	27 2 37	3284	25 38 7	3278	24 13 30	3272
	Antares	E.	38 59 8	3069	37 30 20	3065	36 1 27	3060	34 32 29	3056
	Sun	E.	91 40 29	3454	90 19 14	3448	88 57 52	3442	87 36 23	3436
22	Pollux	W.	109 42 21	2999	111 12 35	2990	112 43 0	2981	114 13 37	2971
	Regulus	W.	73 22 20	3010	74 52 20	3001	76 22 32	2991	77 52 56	2981
	Saturn	W.	41 43 9	2990	43 13 34	2981	44 44 10	2972	46 14 58	2962
	Sun	E.	80 46 56	3394	79 24 33	3386	78 2 0	3375	76 39 15	3365
23	Regulus	W.	85 28 14	2925	87 0 1	2912	88 32 4	2900	90 4 23	2887
	Saturn	W.	53 52 22	2904	55 24 36	2891	56 57 6	2878	58 29 53	2866
	Spica	W.	31 31 34	2962	33 2 35	2946	34 33 56	2929	36 5 38	2913
	Sun	E.	69 42 18	3306	68 18 13	3292	66 53 52	3279	65 29 16	3265
24	Regulus	W.	97 50 19	2817	99 24 25	2802	100 58 50	2787	102 33 35	2772
	Saturn	W.	66 18 0	2795	67 52 34	2781	69 27 27	2766	71 2 40	2750
	Spica	W.	43 49 15	2832	45 23 1	2815	46 57 9	2799	48 31 38	2782
	Sun	E.	58 22 3	3192	56 55 44	3176	55 29 6	3160	54 2 9	3145
25	Saturn	W.	79 3 58	2671	80 41 17	2654	82 18 59	2638	83 57 3	2621
	Spica	W.	56 29 33	2698	58 6 15	2682	59 43 19	2664	61 20 47	2648
	Sun	E.	46 42 40	3065	45 13 47	3049	43 44 35	3033	42 15 3	3018
26	Saturn	W.	92 12 58	2539	93 53 17	2522	95 33 59	2506	97 15 4	2490
	Spica	W.	69 33 48	2564	71 13 33	2546	72 53 42	2530	74 34 14	2514
	Mars	W.	30 50 12	2759	32 25 34	2741	34 1 19	2724	35 37 27	2707
	Sun	E.	34 42 37	2943	33 11 13	2930	31 39 32	2917	30 7 35	2906
27	Spica	W.	83 2 28	2435	84 45 13	2420	86 28 19	2405	88 11 46	2391
	Mars	W.	43 43 45	2624	45 22 7	2609	47 0 50	2593	48 39 54	2578
	Antares	W.	37 8 41	2439	38 51 20	2423	40 34 22	2407	42 17 47	2392
	Sun	E.	22 24 49	2874	20 51 57	2876	19 19 8	2885	17 46 30	2900
30	Sun	W.	18 16 20	2639	19 54 22	2612	21 33 1	2590	23 12 10	2572
	α Arietis	E.	69 17 22	2272	67 30 41	2270	65 43 57	2269	63 57 12	2269
	Aldebaran	E.	99 29 32	2203	97 41 9	2198	95 52 39	2194	94 4 3	2192
31	Sun	W.	31 32 42	2522	33 13 24	2517	34 54 13	2514	36 35 7	2512
	α Arietis	E.	55 3 57	2285	53 17 35	2291	51 31 22	2298	49 45 20	2307
	Aldebaran	E.	85 0 10	2184	83 11 18	2184	81 22 27	2185	79 33 37	2186

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Mon.	1	20 58 28.51	10.200	S. 17 9 44.8	+42.56	16 16.08	68.31	13 46.16	0.343
Tues.	2	21 2 32.88	10.165	16 52 34.2	43.31	16 15.94	68.19	13 53.96	0.308
Wed.	3	21 6 36.41	10.130	16 35 6.0	44.03	16 15.79	68.08	14 0.92	0.273
Thur.	4	21 10 39.10	10.094	16 17 20.6	+44.74	16 15.64	67.96	14 7.04	0.238
Frid.	5	21 14 40.96	10.059	15 59 18.3	45.43	16 15.49	67.85	14 12.32	0.203
Sat.	6	21 18 41.99	10.025	15 40 59.6	46.11	16 15.33	67.73	14 16.77	0.169
SUN.	7	21 22 42.18	9.991	15 22 25.0	+46.77	16 15.17	67.62	14 20.40	0.135
Mon.	8	21 26 41.55	9.957	15 3 34.9	47.41	16 15.00	67.50	14 23.21	0.101
Tues.	9	21 30 40.10	9.924	14 44 29.6	48.03	16 14.83	67.39	14 25.20	0.068
Wed.	10	21 34 37.85	9.891	14 25 9.6	+48.64	16 14.65	67.28	14 26.39	0.035
Thur.	11	21 38 34.81	9.858	14 5 35.3	49.23	16 14.47	67.17	14 26.80	0.002
Frid.	12	21 42 30.99	9.826	13 45 47.1	49.80	16 14.28	67.06	14 26.43	0.030
Sat.	13	21 46 26.41	9.794	13 25 45.5	+50.35	16 14.09	66.95	14 25.30	0.062
SUN.	14	21 50 21.08	9.763	13 5 30.8	50.89	16 13.89	66.84	14 23.42	0.093
Mon.	15	21 54 15.02	9.732	12 45 3.3	51.40	16 13.69	66.73	14 20.81	0.123
Tues.	16	21 58 8.24	9.702	12 24 23.5	+51.90	16 13.48	66.63	14 17.48	0.153
Wed.	17	22 2 0.75	9.673	12 3 31.8	52.39	16 13.27	66.53	14 13.44	0.182
Thur.	18	22 5 52.57	9.645	11 42 28.5	52.86	16 13.06	66.43	14 8.71	0.210
Frid.	19	22 9 43.71	9.617	11 21 14.1	+53.32	16 12.84	66.33	14 3.31	0.238
Sat.	20	22 13 34.18	9.590	10 59 49.0	53.76	16 12.62	66.23	13 57.26	0.265
SUN.	21	22 17 24.01	9.563	10 38 13.5	54.18	16 12.39	66.13	13 50.56	0.292
Mon.	22	22 21 13.22	9.537	10 16 28.0	+54.59	16 12.16	66.04	13 43.23	0.318
Tues.	23	22 25 1.81	9.512	9 54 33.1	54 98	16 11.93	65.95	13 35.29	0.343
Wed.	24	22 28 49.80	9.487	9 32 29.1	55.35	16 11.70	65.86	13 26.74	0.368
Thur.	25	22 32 37.19	9.463	9 10 16.3	+55.70	16 11.47	65.77	13 17.60	0.392
Frid.	26	22 36 24.00	9.439	8 47 55.3	56.04	16 11.23	65.69	13 7.88	0.416
Sat.	27	22 40 10.25	9.416	8 25 26.4	56.36	16 10.99	65.61	12 57.60	0.439
SUN.	28	22 43 55.95	9.393	8 2 50.0	56.66	16 10.75	65.53	12 46.78	0.462
Mon.	29	22 47 41.11	9.371	7 40 6.6	56.94	16 10.51	65.45	12 35.42	0.484
Tues.	30	22 51 25.75	9.350	S. 7 17 16.6	+57.20	16 10.27	65.38	12 23.53	0.505

Note.—The mean time of semidiameter passing may be found by subtracting $0^s.18$ from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	20 58 26.17	10.199	S. 17 9 54.6	+42.55	13 46.09	0.343	20 44 40.09
Tues.	2	21 2 30.53	10.164	16 52 44.3	43.30	13 53.89	0.308	20 48 36.64
Wed.	3	21 6 34.05	10.129	16 35 16.4	44.02	14 0.85	0.273	20 52 33.20
Thur.	4	21 10 36.73	10.094	16 17 31.2	+44.73	14 6.98	0.238	20 56 29.75
Frid.	5	21 14 38.58	10.059	15 59 29.1	45.42	14 12.27	0.203	21 0 26.31
Sat.	6	21 18 39.60	10.025	15 41 10.6	46.10	14 16.73	0.169	21 4 22.86
SUN.	7	21 22 39.79	9.991	15 22 36.2	+46.76	14 20.37	0.135	21 8 19.42
Mon.	8	21 26 39.16	9.957	15 3 46.3	47.40	14 23.19	0.101	21 12 15.97
Tues.	9	21 30 37.72	9.924	14 44 41.2	48.02	14 25.19	0.068	21 16 12.53
Wed.	10	21 34 35.47	9.891	14 25 21.3	+48.63	14 26.38	0.035	21 20 9.09
Thur.	11	21 38 32.44	9.858	14 5 47.1	49.22	14 26.80	0.002	21 24 5.64
Frid.	12	21 42 28.63	9.826	13 45 59.1	49.79	14 26.44	0.030	21 28 2.19
Sat.	13	21 46 24.06	9.794	13 25 57.6	+50.34	14 25.31	0.062	21 31 58.75
SUN	14	21 50 18.74	9.763	13 5 43.0	50.88	14 23.43	0.093	21 35 55.30
Mon.	15	21 54 12.69	9.733	12 45 15.6	51.40	14 20.83	0.123	21 39 51.86
Tues.	16	21 58 5.92	9.703	12 24 35.9	+51.90	14 17.51	0.153	21 43 48.41
Wed.	17	22 1 58.45	9.674	12 3 44.2	52.39	14 13.48	0.182	21 47 44.97
Thur.	18	22 5 50.29	9.646	11 42 41.0	52.86	14 8.76	0.210	21 51 41.52
Frid.	19	22 9 41 45	9.618	11 21 26.6	+53.32	14 3.37	0.238	21 55 38.08
Sat.	20	22 13 31.95	9.591	11 0 1.5	53.76	13 57.32	0.265	21 59 34.63
SUN.	21	22 17 21.81	9.564	10 38 26 0	54.18	13 50.62	0.292	22 3 31.19
Mon.	22	22 21 11.04	9.538	10 16 40.6	+54.59	13 43.30	0.318	22 7 27.74
Tues.	23	22 24 59.66	9.513	9 54 45.6	54.98	13 35.36	0.343	22 11 24.30
Wed.	24	22 28 47.67	9.488	9 32 41.4	55.35	13 26.82	0.368	22 15 20.85
Thur.	25	22 32 35.09	9.464	9 10 28.6	+55.70	13 17.68	0.392	22 19 17.41
Frid.	26	22 36 21 93	9.440	8 48 7.5	56.04	13 7.97	0.416	22 23 13.96
Sat.	27	22 40 8.21	9.417	8 25 38.5	56.36	12 57.69	0.439	22 27 10.52
SUN.	28	22 43 53.94	9.394	8 3 2.0	56.66	12 46.87	0.462	22 31 7.07
Mon.	29	22 47 39.14	9.372	7 40 18.5	56.94	12 35.51	0.484	22 35 3.63
Tues.	30	22 51 23.82	9.351	S. 7 17 28.4	+57.21	12 23.63	0.505	22 39 0.18

Note.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

Diff. for 1 Hour
$+9^s.8565$.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	32	312 8 56.0	9 4.0	152.24	− 0.59	9.9936868	+26.5	3 14 47.92
2	33	313 9 49.1	9 56.9	152.18	0.51	9.9937510	27.1	3 10 52.01
3	34	314 10 40.8	10 48.4	152.13	0.41	9.9938167	27.7	3 6 56.10
4	35	315 11 31.1	11 38.6	152.07	− 0.29	9.9938840	+28.4	3 3 0.19
5	36	316 12 20.0	12 27.4	152.01	0.16	9.9939529	29.1	2 59 4.28
6	37	317 13 7.3	13 14.5	151.94	− 0.02	9.9940236	29.9	2 55 8.37
7	38	318 13 53.0	14 0.0	151.88	+ 0.11	9.9940963	+30.7	2 51 12.47
8	39	319 14 37.2	14 44.1	151.81	0.23	9.9941711	31.6	2 47 16.56
9	40	320 15 19.9	15 26.7	151.75	0.34	9.9942480	32.5	2 43 20.65
10	41	321 16 1.0	16 7.7	151.68	+ 0.43	9.9943270	+33.4	2 39 24.73
11	42	322 16 40.6	16 47.1	151.62	0.49	9.9944082	34.3	2 35 28.82
12	43	323 17 18.7	17 25.0	151.56	0.52	9.9944915	35.2	2 31 32.91
13	44	324 17 55.4	18 1.5	151.50	+ 0.52	9.9945771	+36.1	2 27 37.00
14	45	325 18 30.6	18 36.7	151.44	0.49	9.9946650	37.1	2 23 41.09
15	46	326 19 4.5	19 10.5	151.38	0.43	9.9947552	38.0	2 19 45.19
16	47	327 19 37.0	19 42.8	151.32	+ 0.34	9.9948475	+38.9	2 15 49.28
17	48	328 20 8.1	20 13.8	151.26	0.23	9.9949417	39.6	2 11 53.37
18	49	329 20 37.9	20 43.5	151.21	+ 0.11	9.9950377	40.4	2 7 57.46
19	50	330 21 6.4	21 11.9	151.16	− 0.01	9.9951354	+41.1	2 4 1.55
20	51	331 21 33.7	21 39.1	151.11	0.14	9.9952347	41.7	2 0 5.64
21	52	332 21 59.7	22 4.9	151.06	0.27	9.9953354	42.2	1 56 9.73
22	53	333 22 24.3	22 29.4	151.00	− 0.38	9.9954373	+42.7	1 52 13.82
23	54	334 22 47.5	22 52.5	150.94	0.48	9.9955403	43.1	1 48 17.91
24	55	335 23 9.1	23 14.0	150.87	0.55	9.9956443	43.5	1 44 22.00
25	56	336 23 29.2	23 33.9	150.81	− 0.59	9.9957491	+43.8	1 40 26.09
26	57	337 23 47.7	23 52.3	150.74	0.60	9.9958546	44.1	1 36 30.19
27	58	338 24 4.6	24 9.1	150.67	0.58	9.9959608	44.4	1 32 34.29
28	59	339 24 19.8	24 24.2	150.60	0.54	9.9960676	44.6	1 28 38.38
29	60	340 24 33.2	24 37.5	150.52	0.47	9.9961749	44.8	1 24 42.47
30	61	341 24 44.7	24 48.8	150.44	− 0.36	9.9962827	+45.0	1 20 46.55

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′, to the mean equinox of January 1ᵈ.0.

Diff. for 1 Hour,
— 9ˢ.8296.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 23.9	16 23.3	60 4.4	−0.06	60 2.2	−0.30	2 52.2	2.12	2.8
2	16 22.0	16 19.9	59 57.2	0.53	59 49.7	0.71	3 42.3	2.07	3.8
3	16 17.3	16 14.2	59 40.1	0.88	59 28.8	1.00	4 31.6	2.07	4.8
4	16 10.8	16 7.1	59 16.1	−1.10	59 2.4	−1.18	5 21.6	2.11	5.8
5	16 3.1	15 59.0	58 47.8	1.24	58 32.7	1.27	6 13.1	2.19	6.8
6	15 54.8	15 50.6	58 17.4	1.29	58 1.9	1.30	7 6.9	2.29	7.8
7	15 46.4	15 42.1	57 46.4	−1.29	57 30.9	−1.28	8 2.8	2.35	8.8
8	15 38.0	15 33 9	57 15.6	1.27	57 0.5	1.25	8 59.9	2.37	9.8
9	15 29.8	15 25.8	56 45.6	1.24	56 30.9	1.21	9 56.6	2.32	10.8
10	15 21.9	15 18.0	56 16.5	−1.20	56 2.3	−1.18	10 51.3	2.21	11.8
11	15 14.2	15 10.6	55 48.4	1.15	55 34.9	1.11	11 42.7	2.07	12.8
12	15 7.0	15 3.6	55 21.9	1.07	55 9.4	1.02	12 30.5	1.92	13.8
13	15 0.4	14 57.4	54 57.5	−0.96	54 46.5	−0.88	13 14.9	1.80	14.8
14	14 54.7	14 52.2	54 36.5	0.80	54 27.5	0.70	13 56.8	1.71	15.8
15	14 50.1	14 48.4	54 19.9	0.58	54 13.7	0.45	14 36.9	1.66	16.8
16	14 47.2	14 46.5	54 9.2	−0.30	54 6.6	−0.15	15 16.4	1.65	17.8
17	14 46.3	14 46.7	54 5.8	+0.04	54 7.3	+0.22	15 56.2	1.69	18.8
18	14 47.7	14 49.4	54 11.0	0.41	54 17.1	0.61	16 37.5	1.77	19.8
19	14 51.7	14 54.7	54 25.6	+0.82	54 36.6	+1.03	17 21.1	1.89	20.8
20	14 58.4	15 2.7	54 50.2	1.24	55 6.2	1.44	18 8.1	2.04	21.8
21	15 7.8	15 13.4	55 24.7	1.64	55 45.5	1.82	18 59.0	2.20	22.8
22	15 19.7	15 26.3	56 8.3	+1.98	56 32.9	+2.12	19 53.6	2.34	23.8
23	15 33.5	15 40.9	56 59.1	2.23	57 26.3	2.30	20 51.2	2.43	24.8
24	15 48.5	15 56.1	57 54.2	2.33	58 22.1	2.31	21 50.2	2.44	25.8
25	16 3.6	16 10.7	58 49.5	+2.24	59 15.7	+2.11	22 48.5	2.38	26.8
26	16 17.3	16 23.2	59 40.0	1.92	60 1.8	1.69	23 45.0	2.31	27.8
27	16 28.3	16 32.4	60 20.5	1.41	60 35.5	1.09	6		28.8
28	16 35.4	16 37.2	60 46.5	+0.74	60 53.1	+0.37	0 39.2	2.22	0.3
29	16 37.8	16 37.2	60 55.3	0.00	60 53.0	−0.37	1 31.5	2.16	1.3
30	16 35.4	16 32.6	60 46.6	−0.70	60 36.3	−1.00	2 22.9	2.14	2.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 31 0.12	2.2167	S. 7 58 18.8	15.821
1	23 33 13.03	2.2136	7 42 28.3	15.862
2	23 35 25.75	2.2105	7 26 35.3	15.903
3	23 37 38.29	2.2076	7 10 39.9	15.942
4	23 39 50.66	2.2047	6 54 42.3	15.978
5	23 42 2.86	2.2019	6 38 42.5	16.013
6	23 44 14.89	2.1992	6 22 40.7	16.047
7	23 46 26.76	2.1965	6 6 36.9	16.078
8	23 48 38.47	2.1939	5 50 31.3	16.107
9	23 50 50.03	2.1914	5 34 24.0	16.136
10	23 53 1.44	2.1890	5 18 15.0	16.162
11	23 55 12.71	2.1867	5 2 4.5	16.187
12	23 57 23.84	2.1843	4 45 52.6	16.210
13	23 59 34.83	2.1821	4 29 39.3	16.232
14	0 1 45.69	2.1799	4 13 24.8	16.251
15	0 3 56.42	2.1778	3 57 9.2	16.268
16	0 6 7.03	2.1758	3 40 52.6	16.285
17	0 8 17.52	2.1739	3 24 35.0	16.300
18	0 10 27.90	2.1721	3 8 16.6	16.313
19	0 12 38.17	2.1703	2 51 57.5	16.324
20	0 14 48.34	2.1686	2 35 37.7	16.334
21	0 16 58.40	2.1669	2 19 17.4	16.342
22	0 19 8.37	2.1655	2 2 56.7	16.348
23	0 21 18.26	2.1641	S. 1 46 35.6	16.353

TUESDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	0 23 28.06	2.1627	S. 1 30 14.3	16.357
1	0 25 37.78	2.1613	1 13 52.8	16.358
2	0 27 47.42	2.1601	0 57 31.3	16.357
3	0 29 56.99	2.1589	0 41 9.9	16.356
4	0 32 6.49	2.1579	0 24 48.6	16.352
5	0 34 15.94	2.1570	S. 0 8 27.6	16.347
6	0 36 25.33	2.1560	N. 0 7 53.1	16.341
7	0 38 34.66	2.1552	0 24 13.3	16.332
8	0 40 43.95	2.1545	0 40 33.0	16.323
9	0 42 53.20	2.1538	0 56 52.1	16.312
10	0 45 2.41	2.1532	1 13 10.5	16.300
11	0 47 11.59	2.1527	1 29 28.1	16.285
12	0 49 20.74	2.1522	1 45 44.7	16.269
13	0 51 29.86	2.1519	2 2 0.3	16.252
14	0 53 38.97	2.1517	2 18 14.9	16.233
15	0 55 48.06	2.1515	2 34 28.3	16.212
16	0 57 57.15	2.1514	2 50 40.4	16.190
17	1 0 6.23	2.1513	3 6 51.1	16.167
18	1 2 15.31	2.1514	3 23 0.4	16.142
19	1 4 24.40	2.1516	3 39 8.1	16.115
20	1 6 33.50	2.1518	3 55 14.2	16.087
21	1 8 42.61	2.1520	4 11 18.5	16.057
22	1 10 51.74	2.1524	4 27 21.0	16.026
23	1 13 0.90	2.1529	4 43 21.6	15.994
24	1 15 10.09	2.1534	N. 4 59 20.3	15.960

WEDNESDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 15 10.09	2.1534	N. 4 59 20.3	15.960
1	1 17 19.31	2.1540	5 15 16.8	15.924
2	1 19 28.57	2.1547	5 31 11.1	15.887
3	1 21 37.87	2.1554	5 47 3.2	15.848
4	1 23 47.22	2.1562	6 2 52.9	15.808
5	1 25 56.62	2.1572	6 18 40.2	15.767
6	1 28 6.08	2.1582	6 34 24.9	15.723
7	1 30 15.60	2.1592	6 50 7.0	15.679
8	1 32 25.19	2.1603	7 5 46.4	15.633
9	1 34 34.84	2.1614	7 21 23.0	15.586
10	1 36 44.56	2.1628	7 36 56.7	15.537
11	1 38 54.37	2.1642	7 52 27.5	15.488
12	1 41 4.26	2.1656	8 7 55.3	15.437
13	1 43 14.24	2.1671	8 23 19.9	15.383
14	1 45 24.31	2.1686	8 38 41.3	15.328
15	1 47 34.47	2.1702	8 53 59.3	15.272
16	1 49 44.73	2.1719	9 9 13.9	15.215
17	1 51 55.10	2.1737	9 24 25.1	15.157
18	1 54 5.58	2.1756	9 39 32.8	15.097
19	1 56 16.17	2.1775	9 54 36.8	15.036
20	1 58 26.88	2.1794	10 9 37.1	14.973
21	2 0 37.70	2.1814	10 24 33.6	14.909
22	2 2 48.65	2.1836	10 39 26.2	14.843
23	2 4 59.73	2.1858	N.10 54 14.8	14.776

THURSDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 7 10.94	2.1880	N.11 8 59.3	14.707
1	2 9 22.29	2.1903	11 23 39.7	14.638
2	2 11 33.78	2.1926	11 38 15.9	14.567
3	2 13 45.40	2.1949	11 52 47.8	14.495
4	2 15 57.17	2.1974	12 7 15.3	14.421
5	2 18 9.09	2.2000	12 21 38.3	14.346
6	2 20 21.17	2.2026	12 35 56.8	14.270
7	2 22 33.40	2.2052	12 50 10.7	14.192
8	2 24 45.79	2.2079	13 4 19.9	14.112
9	2 26 58.35	2.2107	13 18 24.2	14.032
10	2 29 11.07	2.2134	13 32 23.7	13.951
11	2 31 23.96	2.2163	13 46 18.3	13.868
12	2 33 37.03	2.2192	14 0 7.9	13.784
13	2 35 50.27	2.2222	14 13 52.4	13.698
14	2 38 3.69	2.2252	14 27 31.7	13.611
15	2 40 17.29	2.2282	14 41 5.7	13.522
16	2 42 31.07	2.2312	14 54 34.4	13.433
17	2 44 45.04	2.2344	15 7 57.7	13.342
18	2 46 59.20	2.2376	15 21 15.4	13.249
19	2 49 13.55	2.2408	15 34 27.6	13.156
20	2 51 28.09	2.2440	15 47 34.2	13.062
21	2 53 42.83	2.2472	16 0 35.0	12.965
22	2 55 57.76	2.2506	16 13 30.0	12.868
23	2 58 12.90	2.2540	16 26 19.2	12.770
24	3 0 28.24	2.2573	N.16 39 2.4	12.670

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 5.					SUNDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	3 0 28.24	2.2573	N.16 39 2.4	12.670	0	4 52 53.75	2.4206	N.24 30 17.0	6.568
1	3 2 43.78	2.2607	16 51 39.6	12.569	1	4 55 19.06	2.4231	24 36 46.6	6.418
2	3 4 59.53	2.2642	17 4 10.7	12.467	2	4 57 44.52	2.4256	24 43 7.2	6.268
3	3 7 15.49	2.2677	17 16 35.6	12.363	3	5 0 10.13	2.4280	24 49 18.8	6.117
4	3 9 31.65	2.2712	17 28 54.3	12.259	4	5 2 35.88	2.4303	24 55 21.3	5.966
5	3 11 48.03	2.2747	17 41 6.7	12.152	5	5 5 1.76	2.4325	25 1 14.7	5.813
6	3 14 4.62	2.2782	17 53 12.6	12.045	6	5 7 27.78	2.4347	25 6 58.9	5.660
7	3 16 21.42	2.2818	18 5 12.1	11.937	7	5 9 53.93	2.4368	25 12 33.9	5.507
8	3 18 38.44	2.2854	18 17 5.1	11.827	8	5 12 20.20	2.4388	25 17 59.7	5.353
9	3 20 55.67	2.2890	18 28 51.4	11.716	9	5 14 46.58	2.4407	25 23 16.3	5.199
10	3 23 13.12	2.2927	18 40 31.0	11.604	10	5 17 13.08	2.4426	25 28 23.6	5.044
11	3 25 30.79	2.2963	18 52 3.9	11.492	11	5 19 39.69	2.4443	25 33 21.6	4.888
12	3 27 48.68	2.3000	19 3 30.0	11.378	12	5 22 6.39	2.4459	25 38 10.2	4.732
13	3 30 6.79	2.3036	19 14 49.2	11.262	13	5 24 33.19	2.4475	25 42 49.5	4.576
14	3 32 25.12	2.3072	19 26 1.4	11.145	14	5 27 0.09	2.4490	25 47 19.4	4.419
15	3 34 43.66	2.3108	19 37 6.6	11.027	15	5 29 27.07	2.4503	25 51 39.8	4.262
16	3 37 2.42	2.3145	19 48 4.7	10.908	16	5 31 54.13	2.4516	25 55 50.8	4.104
17	3 39 21.40	2.3183	19 58 55.6	10.788	17	5 34 21.26	2.4527	25 59 52.3	3.947
18	3 41 40.61	2.3220	20 9 39.3	10.667	18	5 36 48.45	2.4537	26 3 44.4	3.789
19	3 44 0.04	2.3256	20 20 15.7	10.545	19	5 39 15.70	2.4547	26 7 27.0	3.630
20	3 46 19.68	2.3292	20 30 44.7	10.422	20	5 41 43.01	2.4557	26 11 0.0	3.471
21	3 48 39.54	2.3328	20 41 6.3	10.297	21	5 44 10.38	2.4565	26 14 23.5	3.312
22	3 50 59.62	2.3365	20 51 20.4	10.172	22	5 46 37.79	2.4571	26 17 37.5	3.153
23	3 53 19.92	2.3402	N.21 1 26.9	10.045	23	5 49 5.23	2.4576	N.26 20 41.9	2.993
	SATURDAY 6.					MONDAY 8.			
0	3 55 40.44	2.3438	N.21 11 25.8	9.917	0	5 51 32.70	2.4581	N.26 23 36.7	2.833
1	3 58 1.17	2.3474	21 21 17.0	9.789	1	5 54 0.20	2.4584	26 26 21.9	2.674
2	4 0 22.12	2.3510	21 31 0.5	9.659	2	5 56 27.71	2.4586	26 28 57.6	2.515
3	4 2 43.29	2.3546	21 40 36.1	9.528	3	5 58 55.23	2.4587	26 31 23.7	2.355
4	4 5 4.67	2.3581	21 50 3.8	9.396	4	6 1 22.76	2.4588	26 33 40.2	2.195
5	4 7 26.26	2.3616	21 59 23.6	9.263	5	6 3 50.29	2.4587	26 35 47.1	2.034
6	4 9 48.06	2.3651	22 8 35.4	9.129	6	6 6 17.81	2.4586	26 37 44.3	1.874
7	4 12 10.07	2.3685	22 17 39.1	8.994	7	6 8 45.32	2.4583	26 39 31.9	1.714
8	4 14 32.28	2.3719	22 26 34.7	8.859	8	6 11 12.80	2.4578	26 41 10.0	1.555
9	4 16 54.70	2.3753	22 35 22.2	8.723	9	6 13 40.25	2.4573	26 42 38.5	1.395
10	4 19 17.32	2.3787	22 44 1.5	8.585	10	6 16 7.67	2.4567	26 43 57.4	1.235
11	4 21 40.14	2.3820	22 52 32.4	8.446	11	6 18 35.05	2.4558	26 45 6.7	1.075
12	4 24 3.16	2.3852	23 0 55.0	8.307	12	6 21 2.37	2.4549	26 46 6.4	0.915
13	4 26 26.37	2.3884	23 9 9.2	8.166	13	6 23 29.64	2.4540	26 46 56.5	0.756
14	4 28 49.77	2.3917	23 17 14.9	8.025	14	6 25 56.85	2.4529	26 47 37.1	0.597
15	4 31 13.37	2.3949	23 25 12.2	7.883	15	6 28 23.99	2.4517	26 48 8.1	0.438
16	4 33 37.16	2.3980	23 33 0.9	7.740	16	6 30 51.05	2.4503	26 48 29.6	0.279
17	4 36 1.13	2.4009	23 40 41.0	7.597	17	6 33 18.03	2.4489	26 48 41.6	+ 0.120
18	4 38 25.27	2.4038	23 48 12.5	7.452	18	6 35 44.92	2.4473	26 48 44.0	− 0.038
19	4 40 49.59	2.4068	23 55 35.3	7.307	19	6 38 11.71	2.4457	26 48 37.0	0.196
20	4 43 14.09	2.4097	24 2 49.3	7.160	20	6 40 38.40	2.4439	26 48 20.5	0.353
21	4 45 38.76	2.4125	24 9 54.5	7.013	21	6 43 4.98	2.4420	26 47 54.6	0.511
22	4 48 3.59	2.4153	24 16 50.9	6.866	22	6 45 31.44	2.4400	26 47 19.2	0.668
23	4 50 28.59	2.4180	24 23 38.4	6.717	23	6 47 57.78	2.4379	26 46 34.4	0.824
24	4 52 53.75	2.4206	N.24 30 17.0	6.568	24	6 50 23.99	2.4357	N.26 45 40.3	0.980

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 9.					**THURSDAY 11.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	6 50 23.99	2.4357	N.26 45 40.3	0.980	0	8 43 0.39	2.2288	N.23 11 57.3	7.578
1	6 52 50.06	2.4333	26 44 36.8	1.136	1	8 45 13.95	2.2232	23 4 19.2	7.691
2	6 55 15.99	2.4309	26 43 24.0	1.291	2	8 47 27.17	2.2175	22 56 34.4	7.802
3	6 57 41.77	2.4283	26 42 1.9	1.446	3	8 49 40.05	2.2118	22 48 42.9	7.913
4	7 0 7.39	2.4257	26 40 30.5	1.600	4	8 51 52.59	2.2061	22 40 44.9	8.022
5	7 2 32.86	2.4231	26 38 49.9	1.753	5	8 54 4.79	2.2004	22 32 40.3	8.130
6	7 4 58.16	2.4202	26 37 0.1	1.906	6	8 56 16.64	2.1947	22 24 29.3	8.236
7	7 7 23.28	2.4172	26 35 1.1	2.059	7	8 58 28.15	2.1889	22 16 12.0	8.342
8	7 9 48.22	2.4142	26 32 53.0	2.211	8	9 0 39.31	2.1832	22 7 48.3	8.447
9	7 12 12.98	2.4111	26 30 35.8	2.362	9	9 2 50.13	2.1774	21 59 18.3	8.551
10	7 14 37.55	2.4078	26 28 9.5	2.512	10	9 5 0.60	2.1716	21 50 42.2	8.652
11	7 17 1.92	2.4044	26 25 34.3	2.662	11	9 7 10.72	2.1658	21 42 0.0	8.753
12	7 19 26.08	2.4009	26 22 50.1	2.812	12	9 9 20.50	2.1601	21 33 11.8	8.853
13	7 21 50.03	2.3974	26 19 56.9	2.960	13	9 11 29.93	2.1543	21 24 17.6	8.952
14	7 24 13.77	2.3938	26 16 54.9	3.108	14	9 13 39.01	2.1485	21 15 17.6	9.049
15	7 26 37.29	2.3901	26 13 44.0	3.255	15	9 15 47.75	2.1427	21 6 11.8	9.145
16	7 29 0.58	2.3863	26 10 24.3	3.401	16	9 17 56.14	2.1369	20 57 0.2	9.241
17	7 31 23.65	2.3825	26 6 55.9	3.546	17	9 20 4.18	2.131	20 47 42.9	9.334
18	7 33 46.48	2.3765	26 3 18.8	3.690	18	9 22 11.88	2.1254	20 38 20.1	9.426
19	7 36 9.07	2.3744	25 59 33.1	3.834	19	9 24 19.23	2.1197	20 28 51.8	9.517
20	7 38 31.41	2.3702	25 55 38.7	3.977	20	9 26 26.24	2.1140	20 19 18.0	9.606
21	7 40 53.50	2.3660	25 51 35.8	4.119	21	9 28 32.91	2.1082	20 9 38.8	9.697
22	7 43 15.33	2.3617	25 47 24.4	4.261	22	9 30 39.23	2.1025	19 59 54.3	9.785
23	7 45 36.90	2.3573	N.25 43 4.5	4.401	23	9 32 45.21	2.0968	N.19 50 4.6	9.872
	WEDNESDAY 10.					**FRIDAY 12.**			
0	7 47 58.21	2.3529	N.25 38 36.3	4.540	0	9 34 50.85	2.0912	N.19 40 9.7	9.958
1	7 50 19.25	2.3484	25 33 59.7	4.679	1	9 36 56.15	2.0855	19 30 9.7	10.042
2	7 52 40.01	2.3438	25 29 14.8	4.816	2	9 39 1.11	2.0798	19 20 4.7	10.124
3	7 55 0.50	2.3392	25 24 21.8	4.952	3	9 41 5.73	2.0742	19 9 54.8	10.206
4	7 57 20.71	2.3344	25 19 20.6	5.088	4	9 43 10.02	2.0687	18 59 40.0	10.287
5	7 59 40.63	2.3295	25 14 11.3	5.223	5	9 45 13.97	2.0631	18 49 20.4	10.367
6	8 2 0.25	2.3246	25 8 53.9	5.357	6	9 47 17.59	2.0576	18 38 56.0	10.446
7	8 4 19.58	2.3197	25 3 28.5	5.489	7	9 49 20.88	2.0521	18 28 26.9	10.523
8	8 6 38.62	2.3148	24 57 55.2	5.620	8	9 51 23.84	2.0466	18 17 53.2	10.599
9	8 8 57.36	2.3097	24 52 14.1	5.750	9	9 53 26.47	2.0412	18 7 15.0	10.673
10	8 11 15.79	2.3046	24 46 25.2	5.880	10	9 55 28.78	2.0357	17 56 32.4	10.747
11	8 13 33.91	2.2995	24 40 28.5	6.009	11	9 57 30.76	2.0303	17 45 45.4	10.820
12	8 15 51.73	2.2943	24 34 24.1	6.137	12	9 59 32.42	2.0250	17 34 54.0	10.892
13	8 18 9.23	2.2891	24 28 12.1	6.263	13	10 1 33.76	2.0197	17 23 58.4	10.962
14	8 20 26.42	2.2838	24 21 52.6	6.388	14	10 3 34.78	2.0144	17 12 58.6	11.032
15	8 22 43.29	2.2785	24 15 25.6	6.512	15	10 5 35.49	2.0092	17 1 54.6	11.100
16	8 24 59.84	2.2731	24 8 51.2	6.634	16	10 7 35.88	2.0039	16 50 46.6	11.167
17	8 27 16.06	2.2677	24 2 9.5	6.756	17	10 9 35.96	1.9988	16 39 34.6	11.232
18	8 29 31.96	2.2622	23 55 20.5	6.877	18	10 11 35.74	1.9937	16 28 18.7	11.297
19	8 31 47.53	2.2567	23 48 24.2	6.997	19	10 13 35.21	1.9886	16 16 59.0	11.361
20	8 34 2.77	2.2512	23 41 20.8	7.115	20	10 15 34.37	1.9835	16 5 35.4	11.424
21	8 36 17.68	2.2457	23 34 10.4	7.232	21	10 17 33.23	1.9786	15 54 8.1	11.485
22	8 38 32.25	2.2401	23 26 53.0	7.348	22	10 19 31.80	1.9737	15 42 37.2	11.545
23	8 40 46.49	2.2345	23 19 28.6	7.464	23	10 21 30.07	1.9687	15 31 2.7	11.605
24	8 43 0.39	2.2288	N.23 11 57.3	7.578	24	10 23 28.04	1.9638	N.15 19 24.6	11.664

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	10 23 28.04	1.9638	N.15 19 24.6	11.664
1	10 25 25.72	1.9590	15 7 43.0	11.721
2	10 27 23.12	1.9542	14 55 58.1	11.776
3	10 29 20.23	1.9495	14 44 9.9	11.831
4	10 31 17.06	1.9448	14 32 18.4	11.886
5	10 33 13.61	1.9402	14 20 23.6	11.939
6	10 35 9.88	1.9355	14 8 25.7	11.991
7	10 37 5.87	1.9310	13 56 24.7	12.042
8	10 39 1.60	1.9266	13 44 20.7	12.092
9	10 40 57.06	1.9221	13 32 13.7	12.140
10	10 42 52.25	1.9178	13 20 3.9	12.188
11	10 44 47.19	1.9135	13 7 51.2	12.235
12	10 46 41.87	1.9092	12 55 35.7	12.281
13	10 48 36.30	1.9050	12 43 17.5	12.326
14	10 50 30.47	1.9008	12 30 56.6	12.369
15	10 52 24.39	1.8967	12 18 33.2	12.412
16	10 54 18.07	1.8927	12 6 7.2	12.454
17	10 56 11.51	1.8886	11 53 38.7	12.496
18	10 58 4.70	1.8846	11 41 7.7	12.536
19	10 59 57.66	1.8808	11 28 34.4	12.574
20	11 1 50.39	1.8770	11 15 58.8	12.612
21	11 3 42.90	1.8732	11 3 20.9	12.650
22	11 5 35.18	1.8695	10 50 40.8	12.687
23	11 7 27.24	1.8659	N.10 37 58.5	12.722

SUNDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	11 9 19.09	1.8623	N.10 25 14.2	12.755
1	11 11 10.72	1.8587	10 12 27.9	12.788
2	11 13 2.14	1.8553	9 59 39.6	12.821
3	11 14 53.36	1.8520	9 46 49.3	12.854
4	11 16 44.38	1.8486	9 33 57.1	12.885
5	11 18 35.19	1.8452	9 21 3.1	12.914
6	11 20 25.80	1.8419	9 8 7.4	12.943
7	11 22 16.22	1.8388	8 55 10.0	12.971
8	11 24 6.46	1.8357	8 42 10.9	12.998
9	11 25 56.51	1.8327	8 29 10.2	13.025
10	11 27 46.38	1.8297	8 16 7.9	13.050
11	11 29 36.08	1.8268	8 3 4.2	13.074
12	11 31 25.60	1.8239	7 49 59.0	13.098
13	11 33 14.95	1.8212	7 36 52.4	13.121
14	11 35 4.14	1.8185	7 23 44.5	13.143
15	11 36 53.17	1.8158	7 10 35.2	13.165
16	11 38 42.04	1.8132	6 57 24.7	13.185
17	11 40 30.75	1.8106	6 44 13.0	13.205
18	11 42 19.31	1.8082	6 31 0.1	13.224
19	11 44 7.73	1.8058	6 17 46.1	13.242
20	11 45 56.01	1.8034	6 4 31.1	13.259
21	11 47 44.14	1.8011	5 51 15.1	13.275
22	11 49 32.14	1.7989	5 37 58.1	13.291
23	11 51 20.01	1.7968	5 24 40.2	13.305
24	11 53 7.76	1.7947	N. 5 11 21.5	13.318

MONDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 53 7.76	1.7947	N. 5 11 21.5	13.318
1	11 54 55.38	1.7927	4 58 2.0	13.332
2	11 56 42.88	1.7908	4 44 41.7	13.345
3	11 58 30.27	1.7889	4 31 20.6	13.357
4	12 0 17.55	1.7871	4 17 58.8	13.368
5	12 2 4.72	1.7853	4 4 36.4	13.378
6	12 3 51.78	1.7835	3 51 13.5	13.387
7	12 5 38.74	1.7819	3 37 50.0	13.396
8	12 7 25.61	1.7804	3 24 26.0	13.403
9	12 9 12.39	1.7789	3 11 1.6	13.410
10	12 10 59.08	1.7775	2 57 36.8	13.417
11	12 12 45.69	1.7761	2 44 11.6	13.423
12	12 14 32.22	1.7748	2 30 46.0	13.428
13	12 16 18.67	1.7736	2 17 20.2	13.432
14	12 18 5.05	1.7725	2 3 54.2	13.435
15	12 19 51.37	1.7714	1 50 28.0	13.438
16	12 21 37.62	1.7703	1 37 1.6	13.440
17	12 23 23.81	1.7693	1 23 35.2	13.441
18	12 25 9.94	1.7684	1 10 8.7	13.442
19	12 26 56.02	1.7676	0 56 42.2	13.442
20	12 28 42.06	1.7669	0 43 15.7	13.441
21	12 30 28.05	1.7662	0 29 49.3	13.439
22	12 32 14.00	1.7656	0 16 23.0	13.437
23	12 33 59.92	1.7650	N. 0 2 56.9	13.434

TUESDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 35 45.80	1.7644	S. 0 10 29.1	13.431
1	12 37 31.65	1.7641	0 23 54.8	13.426
2	12 39 17.49	1.7638	0 37 20.2	13.421
3	12 41 3.31	1.7635	0 50 45.3	13.415
4	12 42 49.11	1.7632	1 4 10.0	13.409
5	12 44 34.90	1.7631	1 17 34.3	13.402
6	12 46 20.68	1.7630	1 30 58.2	13.394
7	12 48 6.46	1.7630	1 44 21.6	13.385
8	12 49 52.24	1.7630	1 57 44.4	13.376
9	12 51 38.02	1.7631	2 11 6.7	13.367
10	12 53 23.81	1.7634	2 24 28.4	13.356
11	12 55 9.62	1.7637	2 37 49.4	13.345
12	12 56 55.45	1.7640	2 51 9.8	13.333
13	12 58 41.30	1.7643	3 4 29.4	13.320
14	13 0 27.17	1.7647	3 17 48.2	13.307
15	13 2 13.07	1.7653	3 31 6.3	13.294
16	13 3 59.01	1.7659	3 44 23.5	13.279
17	13 5 44.98	1.7665	3 57 39.7	13.263
18	13 7 30.99	1.7673	4 10 55.0	13.247
19	13 9 17.05	1.7681	4 24 9.4	13.231
20	13 11 3.16	1.7689	4 37 22.7	13.214
21	13 12 49.32	1.7698	4 50 35.0	13.196
22	13 14 35.54	1.7708	5 3 46.2	13.177
23	13 16 21.82	1.7719	5 16 56.2	13.157
24	13 18 8.17	1.7731	S. 5 30 5.1	13.137

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 18 8.17	1.7731	S. 5 30 5.1	13.137
1	13 19 54.59	1.7743	5 43 12.7	13.117
2	13 21 41.08	1.7755	5 56 19.1	13.096
3	13 23 27.65	1.7769	6 9 24.2	13.074
4	13 25 14.31	1.7783	6 22 28.0	13.052
5	13 27 1.05	1.7797	6 35 30.4	13.028
6	13 28 47.88	1.7813	6 48 31.3	13.003
7	13 30 34.81	1.7829	7 1 30.7	12.979
8	13 32 21.83	1.7845	7 14 28.7	12.954
9	13 34 8.95	1.7863	7 27 25.2	12.928
10	13 35 56.18	1.7882	7 40 20.1	12.901
11	13 37 43.53	1.7901	7 53 13.3	12.873
12	13 39 30.99	1.7920	8 6 4.9	12.846
13	13 41 18.57	1.7940	8 18 54.8	12.817
14	13 43 6.27	1.7961	8 31 42.9	12.787
15	13 44 54.10	1.7983	8. 44 29.2	12.757
16	13 46 42.06	1.8005	8 57 13.7	12.726
17	13 48 30.16	1.8027	9 9 56.3	12.694
18	13 50 18.39	1.8051	9 22 36.9	12.661
19	13 52 6.77	1.8076	9 35 15.6	12.628
20	13 53 55.30	1.8100	9 47 52.3	12.595
21	13 55 43.97	1.8125	10 0 27.0	12.561
22	13 57 32.80	1.8151	10 12 59.6	12.525
23	13 59 21.79	1.8178	S. 10 25 30.0	12.488

THURSDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 1 10.94	1.8206	S. 10 37 58.2	12.452
1	14 3 0.26	1.8234	10 50 24.2	12.415
2	14 4 49.75	1.8263	11 2 48.0	12.377
3	14 6 39.42	1.8293	11 15 9.5	12.338
4	14 8 29.27	1.8323	11 27 28.6	12.298
5	14 10 19.30	1.8353	11 39 45.3	12.258
6	14 12 9.51	1.8384	11 51 59.6	12.217
7	14 13 59.91	1.8417	12 4 11.4	12.176
8	14 15 50.51	1.8451	12 16 20.7	12.133
9	14 17 41.32	1.8486	12 28 27.4	12.090
10	14 19 32.33	1.8518	12 40 31.5	12.046
11	14 21 23.54	1.8552	12 52 32.9	12.002
12	14 23 14.96	1.8588	13 4 31.7	11.957
13	14 25 6.60	1.8625	13 16 27.7	11.910
14	14 26 58.46	1.8661	13 28 20.9	11.862
15	14 28 50.53	1.8697	13 40 11.2	11.814
16	14 30 42.83	1.8736	13 51 58.6	11.765
17	14 32 35.36	1.8775	14 3 43.0	11.716
18	14 34 28.13	1.8814	14 15 24.5	11.667
19	14 36 21.13	1.8853	14 27 3.0	11.615
20	14 38 14.37	1.8894	14 38 38.3	11.563
21	14 40 7.86	1.8936	14 50 10.5	11.510
22	14 42 1.60	1.8977	15 1 39.5	11.457
23	14 43 55.59	1.9019	15 13 5.2	11.402
24	14 45 49.83	1.9062	S. 15 24 27.7	11.346

FRIDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 45 49.83	1.9062	S. 15 24 27.7	11.346
1	14 47 44.33	1.9106	15 35 46.8	11.290
2	14 49 39.10	1.9150	15 47 2.5	11.233
3	14 51 34.13	1.9194	15 58 14.8	11.176
4	14 53 29.43	1.9240	16 9 23.6	11.117
5	14 55 25.01	1.9286	16 20 28.9	11.057
6	14 57 20.86	1.9332	16 31 30.5	10.997
7	14 59 16.99	1.9379	16 42 28.5	10.936
8	15 1 13.41	1.9426	16 53 22.8	10.873
9	15 3 10.11	1.9474	17 4 13.3	10.810
10	15 5 7.10	1.9523	17 15 0.0	10.746
11	15 7 4.39	1.9573	17 25 42.8	10.682
12	15 9 1.98	1.9623	17 36 21.8	10.617
13	15 10 59.87	1.9673	17 46 56.8	10.549
14	15 12 58.06	1.9723	17 57 27.7	10.481
15	15 14 56.55	1.9774	18 7 54.5	10.412
16	15 16 55.35	1.9826	18 18 17.1	10.342
17	15 18 54.47	1.9879	18 28 35.6	10.272
18	15 20 53.90	1.9932	18 38 49.8	10.201
19	15 22 53.65	1.9985	18 48 59.7	10.128
20	15 24 53.72	2.0039	18 59 5.2	10.055
21	15 26 54.12	2.0093	19 9 6.3	9.981
22	15 28 54.84	2.0147	19 19 2.9	9.905
23	15 30 55.89	2.0203	S. 19 28 54.9	9.828

SATURDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 32 57.28	2.0259	S. 19 38 42.3	9.751
1	15 34 59.00	2.0315	19 48 25.1	9.673
2	15 37 1.06	2.0371	19 58 3.1	9.593
3	15 39 3.45	2.0428	20 7 36.3	9.513
4	15 41 6.19	2.0486	20 17 4.6	9.432
5	15 43 9.28	2.0543	20 26 28.1	9.350
6	15 45 12.71	2.0601	20 35 46.6	9.267
7	15 47 16.49	2.0659	20 45 0.0	9.182
8	15 49 20.62	2.0718	20 54 8.4	9.097
9	15 51 25.11	2.0778	21 3 11.6	9.009
10	15 53 29.96	2.0837	21 12 9.5	8.921
11	15 55 35.16	2.0897	21 21 2.1	8.832
12	15 57 40.72	2.0957	21 29 49.4	8.743
13	15 59 46.64	2.1017	21 38 31.3	8.652
14	16 1 52.92	2.1078	21 47 7.6	8.559
15	16 3 59.57	2.1139	21 55 38.4	8.466
16	16 6 6.59	2.1200	22 4 3.6	8.373
17	16 8 13.97	2.1261	22 12 23.1	8.278
18	16 10 21.72	2.1322	22 20 36.9	8.182
19	16 12 29.84	2.1384	22 28 44.9	8.083
20	16 14 38.33	2.1447	22 36 46.9	7.984
21	16 16 47.20	2.1509	22 44 43.0	7.885
22	16 18 56.44	2.1571	22 52 33.1	7.784
23	16 21 6.05	2.1633	23 0 17.1	7.682
24	16 23 16.04	2.1696	S. 23 7 54.9	7.578

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 23 16.04	2.1696	S.23 7 54.9	7.578
1	16 25 26.40	2.1758	23 15 26.5	7.474
2	16 27 37.14	2.1821	23 22 51.8	7.369
3	16 29 48.26	2.1884	23 30 10.8	7.262
4	16 31 59.75	2.1947	23 37 23.3	7.154
5	16 34 11.62	2.2010	23 44 29.3	7.046
6	16 36 23.87	2.2072	23 51 28.8	6.936
7	16 38 36.49	2.2135	23 58 21.6	6.824
8	16 40 49.49	2.2198	24 5 7.7	6.712
9	16 43 2.87	2.2261	24 11 47.0	6.598
10	16 45 16.62	2.2323	24 18 19.5	6.484
11	16 47 30.75	2.2386	24 24 45.1	6.367
12	16 49 45.26	2.2449	24 31 3.6	6.250
13	16 52 0.14	2.2511	24 37 15.1	6.132
14	16 54 15.39	2.2572	24 43 19.5	6.012
15	16 56 31.01	2.2634	24 49 16.6	5.892
16	16 58 47.00	2.2697	24 55 6.5	5.771
17	17 1 3.37	2.2759	25 0 49.1	5.648
18	17 3 20.11	2.2820	25 6 24.3	5.524
19	17 5 37.21	2.2881	25 11 52.0	5.399
20	17 7 54.68	2.2942	25 17 12.2	5.272
21	17 10 12.51	2.3002	25 22 24.7	5.145
22	17 12 30.70	2.3062	25 27 29.6	5.017
23	17 14 49.25	2.3122	S.25 32 26.7	4.887

MONDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 17 8.16	2.3181	S.25 37 16.0	4.756
1	17 19 27.42	2.3239	25 41 57.4	4.624
2	17 21 47.03	2.3298	25 46 30.9	4.491
3	17 24 7.00	2.3357	25 50 56.3	4.356
4	17 26 27.32	2.3415	25 55 13.6	4.221
5	17 28 47.98	2.3471	25 59 22.8	4.085
6	17 31 8.97	2.3527	26 3 23.8	3.947
7	17 33 30.30	2.3583	26 7 16.5	3.808
8	17 35 51.97	2.3639	26 11 0.8	3.668
9	17 38 13.97	2.3694	26 14 36.7	3.527
10	17 40 36.30	2.3748	26 18 4.1	3.386
11	17 42 58.95	2.3802	26 21 23.0	3.243
12	17 45 21.92	2.3855	26 24 33.3	3.099
13	17 47 45.21	2.3907	26 27 34.9	2.954
14	17 50 8.81	2.3958	26 30 27.8	2.808
15	17 52 32.71	2.4009	26 33 11.9	2.662
16	17 54 56.92	2.4060	26 35 47.2	2.513
17	17 57 21.43	2.4109	26 38 13.5	2.363
18	17 59 46.23	2.4158	26 40 30.8	2.213
19	18 2 11.32	2.4206	26 42 39.1	2.063
20	18 4 36.70	2.4252	26 44 38 4	1.912
21	18 7 2.35	2.4297	26 46 28.5	1.759
22	18 9 28.27	2.4343	26 48 9.4	1.605
23	18 11 54.47	2.4388	26 49 41.1	1.451
24	18 14 20.93	2.4432	S.26 51 3.5	1.295

TUESDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	18 14 20.93	2.4432	S.26 51 3.5	1.295
1	18 16 47.65	2.4474	26 52 16.5	1.139
2	18 19 14.62	2.4515	26 53 20.1	0.982
3	18 21 41.83	2.4555	26 54 14.3	0.824
4	18 24 9.28	2.4595	26 54 59.0	0.665
5	18 26 36.97	2.4634	26 55 34.1	0.505
6	18 29 4.89	2.4672	26 55 59.6	0.345
7	18 31 33.03	2.4708	26 56 15.5	0.184
8	18 34 1.39	2.4744	26 56 21.7	− 0.022
9	18 36 29.96	2.4778	26 56 18.2	+ 0.140
10	18 38 58.73	2.4811	26 56 4.9	0.303
11	18 41 27.69	2.4843	26 55 41.8	0.467
12	18 43 56.84	2.4874	26 55 8.9	0.631
13	18 46 26.18	2.4904	26 54 26.1	0.796
14	18 48 55.69	2.4933	26 53 33.4	0.962
15	18 51 25.37	2.4961	26 52 30.7	1.128
16	18 53 55.22	2.4987	26 51 18.1	1.294
17	18 56 25.22	2.5012	26 49 55.4	1.461
18	18 58 55.37	2.5037	26 48 22.7	1.629
19	19 1 25.66	2.5060	26 46 39.9	1.796
20	19 3 56.09	2.5082	26 44 47.1	1.964
21	19 6 26.64	2.5102	26 42 44.2	2.133
22	19 8 57.31	2.5121	26 40 31.1	2.303
23	19 11 28.09	2.5139	S.26 38 7.8	2.472

WEDNESDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	19 13 58.98	2.5157	S.26 35 34.4	2.642
1	19 16 29.97	2.5173	26 32 50.8	2.812
2	19 19 1.05	2.5188	26 29 57.0	2.982
3	19 21 32.22	2.5201	26 26 52.9	3.153
4	19 24 3.46	2.5212	26 23 38.6	3.323
5	19 26 34.77	2.5223	26 20 14.1	3.493
6	19 29 6.14	2.5233	26 16 39.4	3.664
7	19 31 37.57	2.5241	26 12 54.4	3.836
8	19 34 9.04	2.5248	26 8 59.1	4.007
9	19 36 40.55	2.5255	26 4 53.5	4.178
10	19 39 12.10	2.5260	26 0 37.7	4.349
11	19 41 43.67	2.5263	25 56 11.6	4.520
12	19 44 15.26	2.5266	25 51 35.3	4.691
13	19 46 46.86	2.5267	25 46 48.7	4.862
14	19 49 18.47	2.5267	25 41 51.9	5.032
15	19 51 50.07	2.5266	25 36 44.8	5.203
16	19 54 21.66	2.5264	25 31 27.5	5.373
17	19 56 53.24	2.5261	25 26 0.0	5.543
18	19 59 24.79	2.5256	25 20 22.3	5.713
19	20 1 56.31	2.5251	25 14 34.4	5.882
20	20 4 27.80	2.5245	25 8 36.4	6.052
21	20 6 59.25	2.5237	25 2 28.2	6.221
22	20 9 30.65	2.5227	24 56 9.9	6.389
23	20 12 1.98	2.5217	24 49 41.5	6.558
24	20 14 33.25	2.5206	S.24 43 3.0	6.726

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 14 33.25	2.5206	S.24 43 3.0	6.726
1	20 17 4.45	2.5194	24 36 14.4	6.893
2	20 19 35.58	2.5181	24 29 15.9	7.059
3	20 22 6.62	2.5167	24 22 7.4	7.225
4	20 24 37.58	2.5152	24 14 48.9	7.390
5	20 27 8.45	2.5136	24 7 20.6	7.554
6	20 29 39.21	2.5119	23 59 42.4	7.719
7	20 32 9.87	2.5101	23 51 54.3	7.883
8	20 34 40.42	2.5082	23 43 56.5	8.045
9	20 37 10.85	2.5062	23 35 48.9	8.207
10	20 39 41.16	2.5041	23 27 31.6	8.369
11	20 42 11.34	2.5019	23 19 4.6	8.529
12	20 44 41.39	2.4997	23 10 28.1	8.688
13	20 47 11.30	2.4974	23 1 42.0	8.847
14	20 49 41.07	2.4950	22 52 46.4	9.006
15	20 52 10.70	2.4926	22 43 41.3	9.162
16	20 54 40.18	2.4900	22 34 26.9	9.318
17	20 57 9.50	2.4874	22 25 3.1	9.474
18	20 59 38.66	2.4847	22 15 30.0	9.628
19	21 2 7.66	2.4819	22 5 47.7	9.781
20	21 4 36.49	2.4791	21 55 56.3	9.932
21	21 7 5.15	2.4762	21 45 55.8	10.083
22	21 9 33.64	2.4732	21 35 46.3	10.233
23	21 12 1.94	2.4702	S.21 25 27.8	10.382

FRIDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 14 30.06	2.4671	S.21 15 0.4	10.530
1	21 16 57.99	2.4640	21 4 24.2	10.676
2	21 19 25.74	2.4609	20 53 30.3	10.821
3	21 21 53.30	2.4576	20 42 45.7	10.965
4	21 24 20.66	2.4543	20 31 43.5	11.107
5	21 26 47.82	2.4511	20 20 32.8	11.249
6	21 29 14.79	2.4478	20 9 13.6	11.389
7	21 31 41.55	2.4444	19 57 46.1	11.527
8	21 34 8.11	2.4409	19 46 10.3	11.665
9	21 36 34.46	2.4374	19 34 26.3	11.801
10	21 39 0.60	2.4339	19 22 34.2	11.935
11	21 41 26.53	2.4305	19 10 34.1	12.067
12	21 43 52.26	2.4270	18 58 26.1	12.199
13	21 46 17.77	2.4234	18 46 10.2	12.330
14	21 48 43.06	2.4198	18 33 46.5	12.458
15	21 51 8.14	2.4162	18 21 15.2	12.585
16	21 53 33.00	2.4126	18 8 36.3	12.712
17	21 55 57.65	2.4089	17 55 49.8	12.836
18	21 58 22.07	2.4052	17 42 56.0	12.958
19	22 0 46.27	2.4016	17 29 54.9	13.079
20	22 3 10.26	2.3980	17 16 46.5	13.199
21	22 5 34.03	2.3943	17 3 31.0	13.317
22	22 7 57.58	2.3906	16 50 8.5	13.433
23	22 10 20.91	2.3869	16 36 39.1	13.547
24	22 12 44.01	2.3832	S.16 23 2.9	13.659

SATURDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 12 44.01	2.3832	S.16 23 2.9	13.659
1	22 15 6.89	2.3796	16 9 20.0	13.770
2	22 17 29.56	2.3760	15 55 30.5	13.880
3	22 19 52.01	2.3723	15 41 34.4	13.988
4	22 22 14.24	2.3687	15 27 31.9	14.094
5	22 24 36.25	2.3651	15 13 23.1	14.198
6	22 26 58.05	2.3615	14 59 8.1	14.301
7	22 29 19.63	2.3578	14 44 47.0	14.402
8	22 31 40.99	2.3542	14 30 19.9	14.501
9	22 34 2.14	2.3507	14 15 46.9	14.598
10	22 36 23.08	2.3472	14 1 8.2	14.693
11	22 38 43.80	2.3436	13 46 23.8	14.787
12	22 41 4.31	2.3401	13 31 33.8	14.878
13	22 43 24.62	2.3367	13 16 38.4	14.968
14	22 45 44.72	2.3332	13 1 37.6	15.057
15	22 48 4.61	2.3298	12 46 31.6	15.143
16	22 50 24.30	2.3265	12 31 20.5	15.227
17	22 52 43.79	2.3232	12 16 4.4	15.310
18	22 55 3.09	2.3200	12 0 43.3	15.391
19	22 57 22.19	2.3167	11 45 17.5	15.469
20	22 59 41.09	2.3134	11 29 47.0	15.547
21	23 1 59.80	2.3102	11 14 11.9	15.622
22	23 4 18.32	2.3071	10 58 32.4	15.695
23	23 6 36.66	2.3041	S.10 42 48.5	15.767

SUNDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 8 54.81	2.3010	S.10 27 0.4	15.836
1	23 11 12.78	2.2980	10 11 8.2	15.903
2	23 13 30.57	2.2951	9 55 12.0	15.968
3	23 15 48.19	2.2922	9 39 12.0	16.032
4	23 18 5.64	2.2893	9 23 8.2	16.094
5	23 20 22.91	2.2864	9 7 0.7	16.154
6	23 22 40.01	2.2837	8 50 49.7	16.212
7	23 24 56.95	2.2811	8 34 35.3	16.267
8	23 27 13.74	2.2785	8 18 17.6	16.321
9	23 29 30.37	2.2759	8 1 56.8	16.373
10	23 31 46.84	2.2733	7 45 32.9	16.423
11	23 34 3.17	2.2709	7 29 6.0	16.472
12	23 36 19.35	2.2684	7 12 36.3	16.518
13	23 38 35.38	2.2661	6 56 3.9	16.562
14	23 40 51.28	2.2638	6 39 28.9	16.604
15	23 43 7.04	2.2616	6 22 51.4	16.644
16	23 45 22.67	2.2594	6 6 11.6	16.682
17	23 47 38.17	2.2573	5 49 29.5	16.719
18	23 49 53.55	2.2552	5 32 45.3	16.753
19	23 52 8.80	2.2532	5 15 59.1	16.786
20	23 54 23.94	2.2514	4 59 11.0	16.817
21	23 56 38.97	2.2496	4 42 21.1	16.845
22	23 58 53.89	2.2478	4 25 29.6	16.872
23	0 1 8.71	2.2461	4 8 36.5	16.897
24	0 3 23.42	2.2444	S. 3 51 42.0	16.919

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 29.				
	h m s	s	° ′ ″	″
0	0 3 23.42	2.2444	S. 3 51 42.0	16.919
1	0 5 38.04	2.2429	3 34 46.2	16.940
2	0 7 52.57	2.2414	3 17 49.2	16.958
3	0 10 7.00	2.2399	3 0 51.2	16.975
4	0 12 21.35	2.2386	2 43 52.2	16.991
5	0 14 35.62	2.2373	2 26 52.3	17.004
6	0 16 49.82	2.2361	2 9 51.7	17.015
7	0 19 3.95	2.2349	1 52 50.5	17.024
8	0 21 18.01	2.2338	1 35 48.8	17.031
9	0 23 32.00	2.2327	1 18 46.8	17.036
10	0 25 45.94	2.2316	1 1 44.5	17.040
11	0 27 59.82	2.2309	0 44 42.0	17.042
12	0 30 13.65	2.2301	0 27 39.5	17.041
13	0 32 27.43	2.2294	S. 0 10 37.1	17.038
14	0 34 41.18	2.2288	N. 0 6 25.1	17.034
15	0 36 54.89	2.2282	0 23 27.0	17.028
16	0 39 8.57	2.2277	0 40 28.5	17.020
17	0 41 22.22	2.2272	0 57 29.4	17.010
18	0 43 35.84	2.2268	1 14 29.7	16.998
19	0 45 49.44	2.2266	1 31 29.2	16.984
20	0 48 3.03	2.2264	1 48 27.8	16.969
21	0 50 16.61	2.2262	2 5 25.5	16.952
22	0 52 30.18	2.2262	2 22 22.1	16.933
23	0 54 43.75	2.2262	N. 2 39 17.5	16.912
TUESDAY, MARCH 1.				
0	0 56 57.32	2.2262	N. 2 56 11.5	16.888

PHASES OF THE MOON.

		d	h	m
☽ First Quarter	Feb.	4	21	38.9
○ Full Moon		12	7	38.1
☾ Last Quarter		20	12	14.7
● New Moon		27	15	47.3

		d	h
☾ Apogee	Feb.	16	21.8
☾ Perigee		28	23.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	III^{h}.	P. L. of Diff.	VI^{h}.	P. L. of Diff.	IX^{h}.	P. L. of Diff.
1	SUN	W.	38° 16′ 4″	2510	39° 57′ 3″	2509	41° 38′ 4″	2509	43° 19′ 5″	2510
	α Arietis	E.	47 59 31	2317	46 13 57	2330	44 28 41	2344	42 43 45	2359
	Aldebaran	E.	77 44 49	2188	75 56 4	2190	74 7 22	2193	72 18 44	2197
2	SUN	W.	51 43 31	2524	53 24 11	2528	55 4 45	2533	56 45 12	2539
	VENUS	W.	19 2 17	2632	20 40 29	2629	22 18 45	2626	23 57 4	2626
	Aldebaran	E.	63 17 11	2222	61 29 16	2229	59 41 31	2235	57 53 56	2243
	Pollux	E.	107 14 13	2186	105 25 25	2192	103 36 45	2197	101 48 13	2202
3	SUN	W.	65 5 25	2571	66 45 0	2578	68 24 25	2586	70 3 39	2594
	α Pegasi	W.	34 45 40	3668	36 3 1	3555	37 22 24	3458	38 43 35	3373
	VENUS	W.	32 8 0	2646	33 45 53	2651	35 23 39	2657	37 1 16	2664
	JUPITER	W.	29 12 49	2328	30 58 7	2333	32 43 18	2339	34 28 21	2345
	Aldebaran	E.	48 59 5	2288	47 12 48	2299	45 26 47	2311	43 41 3	2322
	Pollux	E.	92 47 48	2236	91 0 14	2243	89 12 50	2250	87 25 37	2258
4	SUN	W.	78 17 0	2638	79 55 4	2646	81 32 56	2655	83 10 36	2665
	α Pegasi	W.	45 49 49	3096	47 18 4	3060	48 47 3	3028	50 16 41	3001
	VENUS	W.	45 6 53	2704	46 43 28	2713	48 19 51	2721	49 56 3	2730
	JUPITER	W.	43 11 18	2380	44 55 22	2387	46 39 15	2396	48 22 56	2403
	Aldebaran	E.	34 57 8	2396	33 13 27	2415	31 30 13	2434	29 47 27	2457
	Pollux	E.	78 32 32	2300	76 46 32	2308	75 0 44	2317	73 15 10	2326
5	SUN	W.	91 15 43	2713	92 52 5	2723	94 28 14	2733	96 4 10	2743
	VENUS	W.	57 54 0	2777	59 28 58	2786	61 3 44	2796	62 38 17	2806
	α Pegasi	W.	57 51 50	2914	59 23 51	2904	60 56 5	2896	62 28 29	2889
	JUPITER	W.	56 58 22	2447	58 40 50	2456	60 23 5	2465	62 5 8	2474
	Pollux	E.	64 30 32	2371	62 46 16	2380	61 2 13	2390	59 18 24	2399
	Regulus	E.	100 52 22	2381	99 8 20	2390	97 24 31	2399	95 40 55	2408
6	SUN	W.	104 0 33	2793	105 35 10	2803	107 9 34	2813	108 43 45	2824
	JUPITER	W.	70 32 11	2520	72 12 57	2528	73 53 31	2538	75 33 52	2546
	VENUS	W.	70 27 51	2855	72 1 8	2865	73 34 12	2874	75 7 4	2883
	α Pegasi	W.	70 12 6	2875	71 44 57	2876	73 17 47	2877	74 50 35	2880
	α Arietis	W.	26 34 7	2878	28 6 54	2841	29 40 29	2811	31 14 42	2787
	Pollux	E.	50 42 38	2446	49 0 9	2455	47 17 53	2465	45 35 50	2475
	Regulus	E.	87 6 8	2454	85 23 50	2462	83 41 44	2472	81 59 51	2481
7	SUN	W.	116 31 22	2873	118 4 15	2884	119 36 54	2894	121 9 21	2905
	JUPITER	W.	83 52 30	2591	85 31 37	2601	87 10 31	2610	88 49 13	2618
	VENUS	W.	82 48 18	2932	84 19 56	2942	85 51 22	2951	87 22 36	2962
	α Pegasi	W.	82 33 32	2901	84 5 49	2909	85 37 57	2916	87 9 56	2923
	α Arietis	W.	39 11 52	2724	40 48 0	2719	42 24 15	2716	44 0 34	2713
	Pollux	E.	37 8 56	2522	35 28 13	2532	33 47 44	2542	32 7 29	2551
	Regulus	E.	73 33 39	2527	71 53 3	2536	70 12 39	2545	68 32 28	2553
8	α Pegasi	W.	94 47 16	2969	96 18 7	2980	97 48 45	2991	99 19 9	3004
	α Arietis	W.	52 2 29	2716	53 38 47	2719	55 15 1	2722	56 51 11	2727
	Aldebaran	W.	21 31 15	2807	23 5 34	2787	24 40 19	2772	26 15 23	2762
	Regulus	E.	60 14 40	2599	58 35 44	2609	56 57 1	2618	55 18 30	2627
	SATURN	E.	91 8 11	2566	89 28 30	2574	87 49 0	2583	86 9 42	2591
	Spica	E.	114 17 45	2597	112 38 46	2605	110 59 58	2613	109 21 21	2622

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	**Sun**	W.	45° 0′ 4″	2512	46° 41′ 1″	2514	48° 21′ 55″	2517	50° 2′ 45″	2520
	α Arietis	E.	40 59 12	2378	39 15 5	2398	37 31 28	2422	35 48 25	2450
	Aldebaran	E.	70 30 12	2201	68 41 46	2206	66 53 27	2210	65 5 15	2216
2	**Sun**	W.	58 25 31	2544	60 5 43	2551	61 45 46	2557	63 25 40	2564
	Venus	W.	25 35 23	2629	27 13 39	2631	28 51 52	2635	30 29 59	2640
	Aldebaran	E.	56 6 33	2251	54 19 21	2260	52 32 22	2268	50 45 36	2279
	Pollux	E.	99 59 49	2208	98 11 34	2215	96 23 29	2221	94 35 33	2229
3	**Sun**	W.	71 42 42	2602	73 21 34	2610	75 0 15	2619	76 38 44	2629
	α Pegasi	W.	40 6 22	3301	41 30 32	3238	42 55 56	3184	44 22 24	3137
	Venus	W.	38 38 44	2672	40 16 2	2679	41 53 10	2687	43 30 7	2695
	Jupiter	W.	36 13 15	2350	37 58 1	2357	39 42 37	2364	41 27 3	2372
	Aldebaran	E.	41 55 36	2335	40 10 28	2349	38 25 40	2364	36 41 13	2379
	Pollux	E.	85 38 36	2266	83 51 47	2274	82 5 10	2283	80 18 45	2291
4	**Sun**	W.	84 48 3	2675	86 25 17	2684	88 2 19	2693	89 39 8	2704
	α Pegasi	W.	51 46 52	2978	53 17 32	2958	54 48 38	2941	56 20 5	2927
	Venus	W.	51 32 3	2739	53 7 51	2749	54 43 26	2758	56 18 49	2767
	Jupiter	W.	50 6 26	2412	51 49 44	2421	53 32 49	2429	55 15 42	2438
	Aldebaran	E.	28 5 13	2482	26 23 34	2510	24 42 35	2543	23 2 22	2583
	Pollux	E.	71 29 48	2335	69 44 40	2344	67 59 44	2353	66 15 1	2362
5	**Sun**	W.	97 39 53	2753	99 15 23	2763	100 50 39	2772	102 25 43	2783
	Venus	W.	64 12 37	2816	65 46 44	2825	67 20 39	2835	68 54 21	2845
	α Pegasi	W.	64 1 2	2883	65 33 42	2880	67 6 27	2877	68 39 15	2875
	Jupiter	W.	63 46 58	2483	65 28 35	2492	67 10 0	2501	68 51 12	2510
	Pollux	E.	57 34 48	2408	55 51 25	2418	54 8 16	2427	52 25 20	2437
	Regulus	E.	93 57 31	2417	92 14 21	2426	90 31 24	2436	88 48 40	2444
6	**Sun**	W.	110 17 42	2833	111 51 27	2844	113 24 58	2853	114 58 17	2864
	Jupiter	W.	77 14 1	2556	78 53 57	2565	80 33 40	2574	82 13 11	2583
	Venus	W.	76 39 44	2894	78 12 11	2903	79 44 26	2913	81 16 28	2923
	α Pegasi	W.	76 23 20	2883	77 56 1	2886	79 28 38	2891	81 1 8	2896
	α Arietis	W.	32 49 27	2768	34 24 37	2753	36 0 7	2741	37 35 53	2731
	Pollux	E.	43 54 1	2484	42 12 25	2493	40 31 2	2502	38 49 52	2512
	Regulus	E.	80 18 11	2490	78 36 44	2499	76 55 30	2508	75 14 28	2517
7	**Sun**	W.	122 41 34	2914	124 13 35	2925	125 45 22	2935	127 16 57	2946
	Jupiter	W.	90 27 43	2627	92 6 1	2636	93 44 7	2645	95 22 1	2654
	Venus	W.	88 53 37	2970	90 24 27	2980	91 55 5	2989	93 25 31	2998
	α Pegasi	W.	88 41 46	2931	90 13 25	2939	91 44 54	2949	93 16 11	2958
	α Arietis	W.	45 36 57	2712	47 13 21	2712	48 49 45	2713	50 26 8	2714
	Pollux	E.	30 27 27	2561	28 47 39	2572	27 8 6	2583	25 28 47	2593
	Regulus	E.	66 52 29	2563	65 12 43	2572	63 33 9	2581	61 53 48	2501
8	α Pegasi	W.	100 49 17	3017	102 19 9	3030	103 48 45	3044	105 18 3	3059
	α Arietis	W.	58 27 15	2731	60 3 14	2736	61 39 6	2741	63 14 52	2746
	Aldebaran	W.	27 50 41	2754	29 26 9	2749	31 1 44	2746	32 37 23	2744
	Regulus	E.	53 40 12	2637	52 2 7	2646	50 24 14	2655	48 46 34	2665
	Saturn	E.	84 30 35	2599	82 51 39	2608	81 12 55	2616	79 34 22	2625
	Spica	E.	107 42 56	2629	106 4 41	2638	104 26 38	2646	102 48 46	2655

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Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	α Arietis	W.	64° 50′ 31″	2751	66° 26′ 3″	2757	68° 1′ 27″	2763	69° 36′ 43″	2769
	Aldebaran	W.	34 13 4	2744	35 48 45	2746	37 24 24	2748	39 0 0	2750
	Regulus	E.	47 9 7	2675	45 31 53	2684	43 54 52	2695	42 18 5	2704
	Saturn	E.	77 56 1	2633	76 17 51	2641	74 39 52	2649	73 2 4	2658
	Spica	E.	101 11 5	2663	99 33 35	2671	97 56 16	2679	96 19 8	2687
10	α Arietis	W.	77 30 55	2804	79 5 18	2811	80 39 31	2818	82 13 35	2826
	Aldebaran	W.	46 56 51	2772	48 31 55	2779	50 6 51	2784	51 41 40	2790
	Regulus	E.	34 17 38	2760	32 42 17	2772	31 7 13	2785	29 32 26	2798
	Saturn	E.	64 55 53	2699	63 19 12	2707	61 42 42	2716	60 6 23	2725
	Spica	E.	88 16 14	2729	86 40 12	2738	85 4 22	2745	83 28 42	2754
11	α Arietis	W.	90 1 23	2866	91 34 25	2875	93 7 16	2883	94 39 56	2892
	Aldebaran	W.	59 33 38	2824	61 7 35	2831	62 41 23	2838	64 15 2	2845
	Saturn	E.	52 7 35	2766	50 32 23	2774	48 57 21	2782	47 22 30	2791
	Spica	E.	75 33 12	2796	73 58 39	2805	72 24 18	2813	70 50 7	2822
12	Aldebaran	W.	72 0 52	2883	73 33 33	2891	75 6 4	2898	76 38 25	2905
	Pollux	W.	27 48 25	2864	29 21 30	2871	30 54 26	2878	32 27 13	2884
	Saturn	E.	39 30 59	2833	37 57 14	2841	36 23 39	2849	34 50 15	2858
	Spica	E.	63 2 2	2865	61 28 58	2874	59 56 6	2882	58 23 24	2891
	Antares	E.	108 54 11	2855	107 20 55	2863	105 47 49	2871	104 14 53	2880
13	Aldebaran	W.	84 17 44	2945	85 49 6	2952	87 20 19	2960	88 51 22	2968
	Pollux	W.	40 8 54	2921	41 40 46	2928	43 12 29	2935	44 44 3	2942
	Spica	E.	50 42 45	2935	49 11 10	2944	47 39 47	2953	46 8 35	2962
	Antares	E.	96 32 49	2919	95 0 54	2927	93 29 9	2935	91 57 34	2942
	Mars	E.	100 6 12	3139	98 38 50	3148	97 11 39	3157	95 44 38	3164
14	Aldebaran	W.	96 24 16	3005	97 54 23	3011	99 24 22	3018	100 54 12	3026
	Pollux	W.	52 19 38	2977	53 50 19	2984	55 20 52	2990	56 51 17	2997
	Regulus	W.	16 27 57	3129	17 55 31	3114	19 23 24	3102	20 51 31	3094
	Spica	E.	38 35 23	3007	37 5 19	3016	35 35 26	3026	34 5 45	3035
	Antares	E.	84 21 58	2978	82 51 18	2985	81 20 47	2992	79 50 24	2998
	Mars	E.	88 31 52	3203	87 5 46	3209	85 39 48	3217	84 13 59	3224
15	Pollux	W.	64 21 23	3026	65 51 3	3032	67 20 36	3037	68 50 3	3042
	Regulus	W.	28 13 48	3080	29 42 22	3081	31 10 55	3082	32 39 27	3082
	Antares	E.	72 20 29	3029	70 50 52	3034	69 21 22	3040	67 51 59	3045
	Mars	E.	77 6 52	3256	75 41 49	3261	74 16 52	3267	72 52 2	3273
16	Pollux	W.	76 15 55	3062	77 44 51	3065	79 13 43	3069	80 42 31	3071
	Regulus	W.	40 1 43	3091	41 30 4	3091	42 58 24	3093	44 26 42	3095
	Antares	E.	60 26 30	3067	58 57 40	3070	57 28 54	3073	56 0 12	3077
	Mars	E.	65 49 21	3294	64 25 3	3299	63 0 50	3302	61 36 41	3305
	Sun	E.	138 55 28	3484	137 34 46	3485	136 14 5	3487	134 53 26	3488
17	Pollux	W.	88 5 52	3079	89 34 27	3080	91 3 1	3080	92 31 35	3079
	Regulus	W.	51 47 53	3097	53 16 6	3097	54 44 19	3096	56 12 33	3096
	Saturn	W.	21 13 46	3064	22 42 40	3063	24 11 35	3062	25 40 31	3061
	Antares	E.	48 37 30	3087	47 9 4	3088	45 40 40	3088	44 12 16	3089
	Mars	E.	54 36 37	3314	53 12 42	3315	51 48 48	3316	50 24 55	3316

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Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
9	α Arietis	W.	71° 11′ 51″	2776	72° 46′ 50″	2782	74° 21′ 41″	2789	75° 56′ 23″	2797
	Aldebaran	W.	40 35 33	2754	42 11 1	2758	43 46 24	2763	45 21 41	2768
	Regulus	E.	40 41 31	2715	39 5 11	2725	37 29 5	2737	35 53 14	2748
	Saturn	E.	71 24 28	2666	69 47 2	2675	68 9 48	2683	66 32 45	2691
	Spica	E.	94 42 11	2695	93 5 25	2704	91 28 50	2712	89 52 26	2721
10	α Arietis	W.	83 47 29	2834	85 21 13	2842	86 54 47	2850	88 28 10	2858
	Aldebaran	W.	53 16 21	2797	54 50 53	2803	56 25 17	2810	57 59 32	2817
	Regulus	E.	27 57 56	2813	26 23 45	2830	24 49 56	2848	23 16 30	2867
	Saturn	E.	58 30 16	2732	56 54 19	2741	55 18 33	2750	53 42 59	2757
	Spica	E.	81 53 14	2763	80 17 57	2771	78 42 51	2779	77 7 56	2788
11	α Arietis	W.	96 12 25	2901	97 44 43	2909	99 16 50	2919	100 48 45	2927
	Aldebaran	W.	65 48 31	2852	67 21 51	2860	68 55 1	2868	70 28 1	2875
	Saturn	E.	45 47 50	2799	44 13 21	2808	42 39 3	2816	41 4 56	2824
	Spica	E.	69 16 8	2831	67 42 20	2839	66 8 43	2848	64 35 17	2856
12	Aldebaran	W.	78 10 37	2914	79 42 38	2921	81 14 30	2929	82 46 12	2937
	Pollux	W.	33 59 52	2891	35 32 22	2899	37 4 42	2906	38 36 53	2914
	Saturn	E.	33 17 2	2866	31 44 0	2874	30 11 8	2883	28 38 28	2891
	Spica	E.	56 50 54	2900	55 18 35	2909	53 46 27	2917	52 14 30	2927
	Antares	E.	102 42 8	2887	101 9 33	2895	99 37 8	2904	98 4 54	2911
13	Aldebaran	W.	90 22 15	2975	91 52 59	2982	93 23 34	2989	94 54 0	2907
	Pollux	W.	46 15 28	2950	47 46 44	2957	49 17 51	2964	50 48 49	2971
	Spica	E.	44 37 34	2970	43 6 44	2980	41 36 6	2989	40 5 39	2997
	Antares	E.	90 26 8	2950	88 54 52	2957	87 23 45	2964	85 52 47	2971
	Mars	E.	94 17 46	3173	92 51 4	3180	91 24 31	3188	89 58 7	3195
14	Aldebaran	W.	102 23 53	3032	103 53 26	3039	105 22 50	3046	106 52 6	3052
	Pollux	W.	58 21 33	3003	59 51 42	3009	61 21 43	3015	62 51 37	3022
	Regulus	W.	22 19 48	3088	23 48 12	3083	25 16 42	3062	26 45 14	3080
	Spica	E.	32 36 16	3046	31 7 0	3056	29 37 56	3067	28 9 6	3078
	Antares	E.	78 20 9	3005	76 50 3	3011	75 20 4	3018	73 50 13	3023
	Mars	E.	82 48 18	3231	81 22 45	3237	79 57 20	3243	78 32 2	3250
15	Pollux	W.	70 19 24	3046	71 48 40	3051	73 17 50	3055	74 46 55	3059
	Regulus	W.	34 7 58	3084	35 36 27	3086	37 4 54	3087	38 33 19	3088
	Antares	E.	66 22 42	3050	64 53 31	3054	63 24 25	3059	61 55 25	3063
	Mars	E.	71 27 19	3278	70 2 42	3282	68 38 10	3287	67 13 43	3291
16	Pollux	W.	82 11 16	3073	83 39 58	3075	85 8 38	3077	86 37 16	3078
	Regulus	W.	45 54 58	3096	47 23 13	3096	48 51 27	3097	50 19 40	3097
	Antares	E.	54 31 34	3079	53 2 59	3082	51 34 27	3083	50 5 57	3086
	Mars	E.	60 12 35	3307	58 48 32	3310	57 24 32	3312	56 0 34	3313
	Sun	E.	133 32 49	3489	132 12 13	3490	130 51 38	3491	129 31 4	3491
17	Pollux	W.	94 0 10	3079	95 28 45	3078	96 57 22	3077	98 26 0	3075
	Regulus	W.	57 40 48	3094	59 9 5	3093	60 37 23	3091	62 5 44	3089
	Saturn	W.	27 9 28	3060	28 38 27	3058	30 7 28	3056	31 36 32	3053
	Antares	E.	42 43 53	3089	41 15 30	3089	39 47 7	3088	38 18 43	3087
	Mars	E.	49 1 2	3315	47 37 8	3315	46 13 14	3313	44 49 18	3312

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17	α Aquilæ	E.	97° 33′ 22″	3905	96° 20′ 7″	3902	95° 6′ 49″	3898	93° 53′ 27″	3895
	Sun	E.	128 10 30	3491	126 49 56	3491	125 29 22	3490	124 8 47	3488
18	Regulus	W.	63 34 7	3086	65 2 34	3083	66 31 4	3079	67 59 39	3075
	Saturn	W.	33 5 39	3051	34 34 49	3047	36 4 3	3044	37 33 21	3041
	Antares	E.	36 50 18	3087	35 21 52	3085	33 53 24	3083	32 24 54	3082
	Mars	E.	43 25 21	3310	42 1 21	3308	40 37 19	3306	39 13 14	3302
	α Aquilæ	E.	87 46 1	3887	86 32 28	3887	85 18 55	3888	84 5 23	3888
	Sun	E.	117 25 24	3478	116 4 35	3475	114 43 43	3471	113 22 46	3466
19	Regulus	W.	75 23 56	3049	76 53 8	3043	78 22 27	3036	79 51 55	3029
	Saturn	W.	45 1 12	3014	46 31 7	3008	48 1 10	3001	49 31 21	2993
	Spica	W.	21 33 24	3127	23 1 1	3110	24 28 59	3095	25 57 15	3079
	Mars	E.	32 11 43	3281	30 47 9	3276	29 22 29	3270	27 57 43	3265
	α Aquilæ	E.	77 58 5	3902	76 44 47	3906	75 31 33	3911	74 18 24	3918
	Sun	E.	106 36 38	3437	105 15 3	3431	103 53 21	3423	102 31 30	3415
20	Regulus	W.	87 21 43	2985	88 52 14	2975	90 22 58	2965	91 53 55	2954
	Saturn	W.	57 4 48	2950	58 36 3	2940	60 7 31	2930	61 39 12	2920
	Spica	W.	33 22 55	3013	34 52 52	3000	36 23 5	2987	37 53 34	2973
	α Aquilæ	E.	68 14 31	3962	67 2 14	3974	65 50 9	3989	64 38 19	4005
	Sun	E.	95 39 47	3366	94 16 52	3356	92 53 45	3345	91 30 25	3332
21	Regulus	W.	99 32 15	2893	101 4 43	2880	102 37 27	2866	104 10 29	2852
	Saturn	W.	69 21 16	2858	70 54 29	2844	72 28 0	2831	74 1 48	2816
	Spica	W.	45 30 15	2904	47 2 29	2890	48 35 1	2875	50 7 52	2859
	α Aquilæ	E.	58 43 40	4116	57 33 54	4146	56 24 37	4180	55 15 52	4218
	Sun	E.	84 30 6	3266	83 5 15	3251	81 40 6	3236	80 14 40	3220
22	Saturn	W.	81 55 37	2740	83 31 24	2724	85 7 32	2707	86 44 2	2690
	Spica	W.	57 57 11	2779	59 32 6	2762	61 7 24	2745	62 43 4	2728
	α Aquilæ	E.	49 42 21	4482	48 38 13	4554	47 35 8	4635	46 33 13	4726
	Sun	E.	73 2 45	3138	71 35 22	3121	70 7 38	3103	68 39 32	3086
23	Saturn	W.	94 52 18	2603	96 31 9	2585	98 10 24	2567	99 50 4	2548
	Spica	W.	70 47 15	2638	72 25 18	2621	74 3 45	2601	75 42 38	2583
	Antares	W.	24 54 58	2656	26 32 37	2635	28 10 45	2613	29 49 22	2592
	Sun	E.	61 13 30	2993	59 43 8	2974	58 12 23	2954	56 41 13	2935
24	Spica	W.	84 3 25	2490	85 44 52	2472	87 26 45	2453	89 9 5	2435
	Antares	W.	38 9 29	2492	39 50 53	2472	41 32 45	2453	43 15 4	2434
	Mars	W.	27 51 45	2698	29 28 28	2676	31 5 40	2655	32 43 20	2635
	Sun	E.	48 59 20	2841	47 25 45	2823	45 51 45	2804	44 17 22	2785
25	Spica	W.	97 47 9	2346	99 32 2	2328	101 17 20	2311	103 3 3	2295
	Antares	W.	51 53 23	2342	53 38 22	2324	55 23 47	2307	57 9 37	2290
	Mars	W.	40 58 31	2537	42 38 53	2517	44 19 42	2499	46 0 56	2481
	Sun	E.	36 19 39	2701	34 43 1	2687	33 6 3	2673	31 28 47	2660
29	Sun	W.	19 12 57	2460	20 55 6	2442	22 37 41	2429	24 20 34	2419
	α Arietis	E.	39 17 3	2247	37 29 46	2268	35 43 0	2294	33 56 51	2324
	Aldebaran	E.	68 47 39	2067	66 55 49	2070	65 4 4	2073	63 12 24	2077

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17	α Aquilæ	E.	92° 40′ 2″	3893	91° 26′ 35″	3890	90° 13′ 5″	3889	88° 59′ 34″	3887
	Sun	E.	122 48 10	3488	121 27 32	3486	120 6 52	3483	118 46 9	3481
18	Regulus	W.	69 28 19	3071	70 57 4	3066	72 25 55	3061	73 54 52	3056
	Saturn	W.	39 2 43	3036	40 32 11	3031	42 1 45	3026	43 31 25	3021
	Antares	E.	30 56 22	3079	29 27 47	3078	27 59 10	3074	26 30 29	3072
	Mars	E.	37 49 5	3299	36 24 52	3294	35 0 34	3290	33 36 11	3286
	α Aquilæ	E.	82 51 51	3890	81 38 21	3892	80 24 53	3894	79 11 27	3898
	Sun	E.	112 1 44	3462	110 40 37	3456	109 19 24	3451	107 58 5	3444
19	Regulus	W.	81 21 32	3021	82 51 19	3013	84 21 16	3004	85 51 24	2995
	Saturn	W.	51 1 42	2986	52 32 12	2977	54 2 53	2969	55 33 45	2960
	Spica	W.	27 25 50	3065	28 54 42	3052	30 23 50	3039	31 53 14	3026
	Mars	E.	26 32 50	3259	25 7 51	3253	23 42 44	3247	22 17 30	3241
	α Aquilæ	E.	73 5 22	3924	71 52 27	3931	70 39 39	3940	69 27 0	3950
	Sun	E.	101 9 30	3406	99 47 20	3397	98 25 0	3387	97 2 29	3377
20	Regulus	W.	93 25 5	2942	94 56 30	2931	96 28 9	2919	98 0 4	2906
	Saturn	W.	63 11 6	2908	64 43 15	2896	66 15 39	2883	67 48 19	2870
	Spica	W.	39 24 20	2961	40 55 22	2946	42 26 42	2932	43 58 20	2919
	α Aquilæ	E.	63 26 44	4023	62 15 27	4042	61 4 29	4065	59 53 53	4088
	Sun	E.	90 6 51	3319	88 43 2	3307	87 18 59	3294	85 54 40	3281
21	Regulus	W.	105 43 49	2838	107 17 27	2823	108 51 25	2808	110 25 42	2793
	Saturn	W.	75 35 55	2801	77 10 21	2787	78 45 6	2772	80 20 11	2756
	Spica	W.	51 41 3	2844	53 14 34	2828	54 48 25	2812	56 22 37	2795
	α Aquilæ	E.	54 7 43	4260	53 0 13	4306	51 53 26	4358	50 47 27	4417
	Sun	E.	78 48 55	3205	77 22 52	3188	75 56 29	3173	74 29 47	3156
22	**Saturn**	W.	88 20 55	2674	89 58 10	2657	91 35 49	2639	93 13 51	2621
	Spica	W.	64 19 7	2710	65 55 33	2692	67 32 23	2675	69 9 37	2657
	α Aquilæ	E.	45 32 35	4827	44 33 21	4940	43 35 38	5068	42 39 36	5214
	Sun	E.	67 11 5	3067	65 42 15	3049	64 13 3	3030	62 43 28	3012
23	**Saturn**	W.	101 30 10	2530	103 10 41	2512	104 51 37	2494	106 32 59	2475
	Spica	W.	77 21 56	2564	79 1 40	2546	80 41 49	2527	82 22 24	2509
	Antares	W.	31 28 28	2572	33 8 2	2552	34 48 3	2532	36 28 32	2512
	Sun	E.	55 9 39	2916	53 37 41	2897	52 5 18	2878	50 32 31	2859
24	Spica	W.	90 51 50	2417	92 35 1	2398	94 18 38	2380	96 2 41	2363
	Antares	W.	44 57 50	2415	46 41 3	2396	48 24 43	2378	50 8 50	2359
	Mars	W.	34 21 28	2615	36 0 3	2594	37 39 6	2575	39 18 35	2556
	Sun	E.	42 42 35	2768	41 7 25	2750	39 31 52	2733	37 55 56	2717
25	Spica	W.	104 49 10	2279	106 35 41	2263	108 22 35	2247	110 9 52	2233
	Antares	W.	58 55 51	2273	60 42 30	2257	62 29 33	2241	64 17 0	2226
	Mars	W.	47 42 36	2464	49 24 40	2447	51 7 8	2430	52 50 0	2414
	Sun	E.	29 51 13	2649	28 13 24	2638	26 35 21	2630	24 57 7	2626
29	**Sun**	W.	26 3 41	2413	27 46 57	2410	29 30 18	2408	31 13 42	2408
	α Arietis	E.	32 11 25	2358	30 26 50	2400	28 43 15	2449	27 0 50	2508
	Aldebaran	E.	61 20 50	2083	59 29 24	2088	57 38 6	2095	55 46 59	2102

AT GREENWICH APPARENT NOON

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	22 51 25.75	9.350	S. 7 17 16.6	+57.20	16 10.27	65.38	12 23.53	0.505
Wed.	2	22 55 9.88	9.329	6 54 20.5	57.45	16 10.03	65.31	12 11.15	0.526
Thur.	3	22 58 53.52	9.309	6 31 18.6	57.68	16 9.79	65.25	11 58.28	0.546
Frid.	4	23 2 36.69	9.290	6 8 11.3	+57.89	16 9.55	65.18	11 44.93	0.565
Sat.	5	23 6 19.40	9.271	5 44 59.2	58.09	16 9.30	65.12	11 31.12	0.584
SUN.	6	23 10 1.67	9.252	5 21 42.6	58.26	16 9.05	65.06	11 16.87	0.602
Mon.	7	23 13 43.52	9.235	4 58 21.8	+58.43	16 8.80	65.00	11 2.21	0.619
Tues.	8	23 17 24.98	9.219	4 34 57.2	58.58	16 8.55	64.94	10 47.16	0.635
Wed.	9	23 21 6.06	9.204	4 11 29.3	58.72	16 8.29	64.89	10 31.73	0.650
Thur.	10	23 24 46.79	9.190	3 47 58.4	+58.84	16 8.03	64.84	10 15.94	0.664
Frid.	11	23 28 27.18	9.177	3 24 24.9	58.95	16 7.77	64.80	9 59.82	0.677
Sat.	12	23 32 7.27	9.165	3 0 49.1	59.04	16 7.51	64.76	9 43.39	0.689
SUN.	13	23 35 47.07	9.153	2 37 11.3	+59.11	16 7.24	64.72	9 26.69	0.701
Mon.	14	23 39 26.61	9.143	2 13 31.9	59.17	16 6.97	64.68	9 9.73	0.711
Tues.	15	23 43 5.92	9.133	1 49 51.3	59.21	16 6.70	64.65	8 52.53	0.721
Wed.	16	23 46 45.01	9.125	1 26 9.8	+59.24	16 6.43	64.62	8 35.12	0.729
Thur.	17	23 50 23.91	9.118	1 2 27.7	59.26	16 6.15	64.59	8 17.52	0.736
Frid.	18	23 54 2.65	9.112	0 38 45.4	59.26	16 5.88	64.57	7 59.76	0.742
Sat.	19	23 57 41.26	9.106	S. 0 15 3.2	+59.25	16 5.60	64.55	7 41.85	0.748
SUN.	20	0 1 19.74	9.101	N. 0 8 38.6	59.22	16 5.32	64.53	7 23.82	0.753
Mon.	21	0 4 58.12	9.097	0 32 19.6	59.18	16 5.04	64.51	7 5.70	0.757
Tues.	22	0 8 36.42	9.094	0 55 59.4	+59.12	16 4.76	64.50	6 47.50	0.760
Wed.	23	0 12 14.65	9.092	1 19 37.6	59.05	16 4.47	64.49	6 29.24	0.762
Thur.	24	0 15 52.85	9.091	1 43 13.9	58.97	16 4.19	64.48	6 10.93	0.763
Frid.	25	0 19 31.03	9.090	2 6 48.0	+58.87	16 3.91	64.47	5 52.60	0.764
Sat.	26	0 23 9.19	9.090	2 30 19.5	58.75	16 3.63	64.47	5 34.26	0.764
SUN.	27	0 26 47.37	9.091	2 53 48.0	58.62	16 3.35	64.47	5 15.94	0.763
Mon.	28	0 30 25.59	9.093	3 17 13.1	+58.47	16 3.07	64.47	4 57.65	0.761
Tues.	29	0 34 3.85	9.095	3 40 34.4	58.31	16 2.79	64.48	4 39.40	0.759
Wed.	30	0 37 42.16	9.098	4 3 51.5	58.13	16 2.51	64.49	4 21.20	0.756
Thur.	31	0 41 20.54	9.101	4 27 4.1	57.93	16 2.24	64.50	4 3.08	0.753
Frid.	32	0 44 59.02	9.105	N. 4 50 11.9	+57.72	16 1.96	64.52	3 45.06	0.749

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^{s}.18$ from the sidereal time.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing; north declinations, increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	22 51 23.82	9.351	S. 7 17 28.4	+57.21	12 23.63	0.505	22 39 0.18
Wed.	2	22 55 7.98	9.330	6 54 32.2	57.46	12 11.25	0.526	22 42 56.73
Thur.	3	22 58 51.66	9.310	6 31 30.1	57.69	11 58.38	0.546	22 46 53.28
Frid.	4	23 2 34.87	9.291	6 8 22.7	+57.90	11 45.08	0.565	22 50 49.84
Sat.	5	23 6 17.62	9.272	5 45 10.4	58.10	11 31.23	0.584	22 54 46.39
SUN.	6	23 9 59.93	9.254	5 21 53.6	58.28	11 16.98	0.602	22 58 42.95
Mon.	7	23 13 41.82	9.237	4 58 32.6	+58.44	11 2.32	0.619	23 2 39.50
Tues.	8	23 17 23.32	9.221	4 35 7.8	58.59	10 47.27	0.635	23 6 36.05
Wed.	9	23 21 4.44	9.206	4 11 39.7	58.73	10 31.84	0.650	23 10 32.60
Thur.	10	23 24 45.21	9.192	3 48 8.5	+58.85	10 16.05	0.664	23 14 29.16
Frid.	11	23 28 25.64	9.179	3 24 34.7	58.96	9 59.93	0.677	23 18 25.71
Sat.	12	23 32 5.77	9.167	3 0 58.6	59.05	9 43.50	0.689	23 22 22.27
SUN.	13	23 35 45.62	9.155	2 37 20.6	+59.12	9 26.80	0.701	23 26 18.82
Mon.	14	23 39 25.21	9.145	2 13 41.0	59.18	9 9.84	0.711	23 30 15.37
Tues.	15	23 43 4.56	9.135	1 50 0.1	59.22	8 52.64	0.721	23 34 11.92
Wed.	16	23 46 43.70	9.127	1 26 18.3	+59.25	8 35.22	0.729	23 38 8.48
Thur.	17	23 50 22.65	9.120	1 2 35.9	59.27	8 17.62	0.736	23 42 5.03
Frid.	18	23 54 1.44	9.114	0 38 53.3	59.27	7 59.86	0.742	23 46 1.59
Sat.	19	23 57 40.09	9.108	S. 0 15 10.8	+59.26	7 41.95	0.748	23 49 58.14
SUN.	20	0 1 18.62	9.103	N. 0 8 31.3	59.23	7 23.92	0.753	23 53 54.70
Mon.	21	0 4 57.04	9.099	0 32 12.6	59.19	7 5.80	0.757	23 57 51.24
Tues.	22	0 8 35.39	9.096	0 55 52.7	+59.13	6 47.59	0.760	0 1 47.80
Wed.	23	0 12 13.67	9.094	1 19 31.2	59.06	6 29.32	0.762	0 5 44.35
Thur.	24	0 15 51.92	9.093	1 43 7.8	58.98	6 11.01	0.763	0 9 40.91
Frid.	25	0 19 30.14	9.092	2 6 42.2	+58.88	5 52.68	0.764	0 13 37.46
Sat.	26	0 23 8.35	9.092	2 30 14.0	58.76	5 34.34	0.764	0 17 34.01
SUN.	27	0 26 46.58	9.093	2 53 42.8	58.63	5 16.02	0.763	0 21 30.56
Mon.	28	0 30 24.84	9.095	3 17 8.2	+58.48	4 57.72	0.761	0 25 27.12
Tues.	29	0 34 3.14	9.097	3 40 29.8	58.32	4 39.47	0.759	0 29 23.67
Wed.	30	0 37 41.49	9.100	4 3 47.3	58.14	4 21.26	0.756	0 33 20.23
Thur.	31	0 41 19.92	9.103	4 27 0.2	57.94	4 3.14	0.753	0 37 16.78
Frid.	32	0 44 58.45	9.107	N. 4 50 8.3	+57.73	3 45.11	0.749	0 41 13.34

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing; north declinations, increasing.

Diff for 1 hour, + 9ˢ.8565. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	61	341 24 44.7	24 48.8	150.44	− 0.36	9.9962827	+45.0	1 20 46.55
2	62	342 24 54.1	24 58.1	150.36	0.24	9.9963910	45.3	1 16 50.64
3	63	343 25 1.4	25 5.4	150.27	− 0.12	9.9964999	45.5	1 12 54.73
4	64	344 25 6.7	25 10.5	150.18	+ 0.02	9.9966095	+45.8	1 8 58.82
5	65	345 25 9.8	25 13.5	150.08	0.15	9.9967199	46.2	1 5 2.92
6	66	346 25 10.7	25 14.3	149.99	0.28	9.9968311	46.6	1 1 7.02
7	67	347 25 9.4	25 12.9	149.90	+ 0.39	9.9969433	+47.0	0 57 11.11
8	68	348 25 6.0	25 9.4	149.81	0.48	9.9970565	47.4	0 53 15.20
9	69	349 25 0.4	25 3.7	149.72	0.55	9.9971708	47.9	0 49 19.29
10	70	350 24 52.7	24 55.9	149.63	+ 0.59	9.9972862	+48.4	0 45 23.38
11	71	351 24 42.8	24 45.9	149.54	0.59	9.9974029	48.9	0 41 27.47
12	72	352 24 30.8	24 33.8	149.45	0.56	9.9975208	49.4	0 37 31.56
13	73	353 24 16.8	24 19.7	149.37	+ 0.51	9.9976400	+49.9	0 33 35.66
14	74	354 24 0.8	24 3.6	149.29	0.43	9.9977605	50.4	0 29 39.75
15	75	355 23 42.8	23 45.5	149.21	0.33	9.9978822	50.9	0 25 43.84
16	76	356 23 23.0	23 25.6	149.13	+ 0.21	9.9980050	+51.4	0 21 47.93
17	77	357 23 1.4	23 3.9	149.06	+ 0.09	9.9981288	51.8	0 17 52.03
18	78	358 22 38.0	22 40.4	148.98	− 0.04	9.9982535	52.1	0 13 56.13
19	79	359 22 12.8	22 15.1	148.91	− 0.17	9.9983790	+52.4	0 10 0.22
20	80	0 21 45.8	21 48.0	148.83	0.29	9.9985051	52.6	0 6 4.31
21	81	1 21 17.1	21 19.2	148.76	0.39	9.9986317	52.8	0 2 8.40 23 58 12.49
22	82	2 20 46.7	20 48.6	148.69	− 0.46	9.9987586	+52.9	23 54 16.58
23	83	3 20 14.5	20 16.2	148.62	0.51	9.9988856	52.9	23 50 20.67
24	84	4 19 40.4	19 42.1	148.55	0.53	9.9990125	52.8	23 46 24.77
25	85	5 19 4.6	19 6.2	148.47	− 0.52	9.9991392	+52.7	23 42 28.86
26	86	6 18 26.9	18 28.4	148.39	0.48	9.9992656	52.6	23 38 32.95
27	87	7 17 47.2	17 48.6	148.30	0.41	9.9993916	52.4	23 34 37.05
28	88	8 17 5.5	17 6.7	148.22	− 0.32	9.9995171	+52.2	23 30 41.14
29	89	9 16 21.7	16 22.8	148.13	0.21	9.9996421	52.0	23 26 45.23
30	90	10 15 35.9	15 36.9	148.04	− 0.08	9.9997666	51.8	23 22 49.32
31	91	11 14 47.9	14 48.8	147.94	+ 0.05	9.9998905	51.5	23 18 53.42
32	92	12 13 57.6	13 58.4	147.85	+ 0.18	0.0000139	+51.3	23 14 57.51

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′, to the mean equinox of January $0^d.0$.

Diff. for 1 Hour,
— $9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 35.4	16 32.6	60 46.6	−0.70	60 36.3	−1.00	2 22.9	2.14	2.3
2	16 28.8	16 24.3	60 22.6	1.27	60 6.0	1.49	3 14.4	2.16	3.3
3	16 19.1	16 13.5	59 47.0	1.66	59 26.4	1.77	4 7.1	2.22	4.3
4	16 7.6	16 1.4	59 4.5	−1.86	58 41.9	−1.89	5 1.6	2.30	5.3
5	15 55.2	15 49.1	58 19.2	1.89	57 56.6	1.87	5 58.0	2.36	6.3
6	15 43.0	15 37.2	57 34.4	1.82	57 13.0	1.75	6 55.4	2.37	7.3
7	15 31.6	15 26.4	56 52.5	−1.67	56 33.1	−1.58	7 52.4	2.32	8.3
8	15 21.4	15 16.7	56 14.8	1.48	55 57.7	1.38	8 47.3	2.22	9.3
9	15 12.4	15 8.4	55 41.8	1.28	55 27.1	1.18	9 39.1	2.08	10.3
10	15 4.7	15 1.3	55 13.6	−1.09	55 1.2	−0.99	10 27.4	1.93	11.3
11	14 58.3	14 55.5	54 49.9	0.90	54 39.7	0.81	11 12.3	1.81	12.3
12	14 53.0	14 50.8	54 30.6	0.72	54 22.6	0.62	11 54.6	1.71	13.3
13	14 49.0	14 47.4	54 15.8	−0.53	54 10.0	−0.44	12 35.0	1.66	14.3
14	14 46.1	14 45.2	54 5.4	0.33	54 2.1	−0.22	13 14.5	1.64	15.3
15	14 44.7	14 44.6	54 0.2	−0.11	53 59.8	+0.02	13 54.1	1.66	16.3
16	14 44.9	14 45.6	54 0.9	+0.16	54 3.6	+0.31	14 34.7	1.73	17.3
17	14 46.9	14 48.7	54 8.2	0.47	54 14.7	0.63	15 17.2	1.82	18.3
18	14 51.0	14 53.8	54 23.2	0.80	54 33.7	0 97	16 2.5	1.95	19.3
19	14 57.3	15 1.4	54 46.5	+1.16	55 1.5	+1.35	16 51.0	2.09	20.3
20	15 6.1	15 11.4	55 18.7	1.54	55 38.2	1.71	17 43.1	2.22	21.3
21	15 17.3	15 23.7	55 59.7	1.88	56 23.3	2.04	18 38.1	2.32	22.3
22	15 30.6	15 37.9	56 48.6	+2.19	57 15.5	+2.30	19 34.9	2.37	23.3
23	15 45.5	15 53.4	57 43.6	2.37	58 12.3	2.41	20 32.0	2.35	24.3
24	16 1.3	16 9.0	58 41.3	2.40	59 9.8	2.34	21 28.0	2.30	25.3
25	16 16.5	16 23.5	59 37.3	+2.22	60 3.0	+2.04	22 22.5	2.23	26.3
26	16 29.8	16 35.2	60 26.1	1.80	60 46.0	1.50	23 15.5	2.18	27.3
27	16 39.6	16 42.8	61 2.1	1.16	61 13.7	+0.77	☌		28.3
28	16 44.6	16 45.1	61 20.5	+0.36	61 22.2	−0.07	0 7.7	2.17	29.3
29	16 44.2	16 41.9	61 18.9	−0.49	61 10.7	0.88	1 0.1	2.20	0.9
30	16 38.5	16 33.9	60 57.9	1.24	60 41.0	1.56	1 53.9	2.27	1.9
31	16 28.3	16 22.0	60 20.7	1.81	59 57.6	2.01	2 49.7	2.36	2.9
32	16 15.2	16 8.0	59 32.4	−2.16	59 5.8	−2.26	3 47.7	2.44	3.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 1.					THURSDAY 3.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	0 56 57.32	2.2262	N. 2 56 11.5	16.888	0	2 45 9.51	2.3044	N.15 27 6.4	13.767
1	0 59 10.90	2.2264	3 13 4.1	16.863	1	2 47 27.85	2.3079	15 40 49.4	13.664
2	1 1 24.49	2.2266	3 29 55.1	16.837	2	2 49 46.37	2.3101	15 54 26.1	13.559
3	1 3 38.09	2.2268	3 46 44.5	16.808	3	2 52 5.06	2.3129	16 7 56.5	13.453
4	1 5 51.71	2.2272	4 3 32.1	16.778	4	2 54 23.92	2.3158	16 21 20.5	13.346
5	1 8 5.36	2.2276	4 20 17.9	16.747	5	2 56 42.96	2.3188	16 34 38.0	13.237
6	1 10 19.03	2.2281	4 37 1.7	16.713	6	2 59 2.18	2.3218	16 47 48.9	13.127
7	1 12 32.73	2.2287	4 53 43.4	16.677	7	3 1 21.58	2.3248	17 0 53.2	13.016
8	1 14 46.47	2.2294	5 10 22.9	16.639	8	3 3 41.16	2.3277	17 13 50.8	12.903
9	1 17 0.26	2.2302	5 27 0.1	16.600	9	3 6 0.91	2.3307	17 26 41.5	12.788
10	1 19 14.09	2.2309	5 43 34.9	16.559	10	3 8 20.84	2.3337	17 39 25.3	12.673
11	1 21 27.97	2.2317	6 0 7.2	16.516	11	3 10 40.96	2.3368	17 52 2.2	12.557
12	1 23 41.89	2.2325	6 16 36.8	16.471	12	3 13 1.26	2.3398	18 4 32.1	12.438
13	1 25 55.87	2.2336	6 33 3.7	16.425	13	3 15 21.74	2.3429	18 16 54.8	12.318
14	1 28 9.92	2.2347	6 49 27.8	16.377	14	3 17 42.41	2.3460	18 29 10.3	12.198
15	1 30 24.03	2.2358	7 5 49.0	16.327	15	3 20 3.26	2.3491	18 41 18.6	12.077
16	1 32 38.21	2.2369	7 22 7.1	16.276	16	3 22 24.30	2.3522	18 53 19.5	11.954
17	1 34 52.46	2.2382	7 38 22.1	16.222	17	3 24 45.52	2.3552	19 5 13.0	11.830
18	1 37 6.79	2.2395	7 54 33.8	16.167	18	3 27 6.93	2.3583	19 16 59.1	11.705
19	1 39 21.20	2.2408	8 10 42.1	16.110	19	3 29 28.52	2.3614	19 28 37.6	11.578
20	1 41 35.69	2.2422	8 26 47.0	16.052	20	3 31 50.30	2.3645	19 40 8.5	11.450
21	1 43 50.27	2.2437	8 42 48.4	15.992	21	3 34 12.26	2.3675	19 51 31.6	11.321
22	1 46 4.94	2.2453	8 58 46.1	15.931	22	3 36 34.40	2.3706	20 2 47.0	11.192
23	1 48 19.71	2.2470	N. 9 14 40.1	15.867	23	3 38 56.73	2.3737	N.20 13 54.6	11.061
WEDNESDAY 2.					FRIDAY 4.				
0	1 50 34.58	2.2487	N. 9 30 30.2	15.802	0	3 41 19.24	2.3767	N.20 24 54.3	10.928
1	1 52 49.55	2.2504	9 46 16.3	15.735	1	3 43 41.93	2.3797	20 35 46.0	10.795
2	1 55 4.63	2.2521	10 1 58.4	15.667	2	3 46 4.80	2.3827	20 46 29.7	10.661
3	1 57 19.81	2.2540	10 17 36.4	15.597	3	3 48 27.86	2.3857	20 57 5.3	10.525
4	1 59 35.11	2.2560	10 33 10.1	15.525	4	3 50 51.09	2.3887	21 7 32.7	10.389
5	2 1 50.53	2.2579	10 48 39.4	15.452	5	3 53 14.50	2.3916	21 17 52.0	10.252
6	2 4 6.06	2.2599	11 4 4.3	15.377	6	3 55 38.08	2.3945	21 28 3.0	10.113
7	2 6 21.72	2.2620	11 19 24.7	15.301	7	3 58 1.84	2.3974	21 38 5.6	9.974
8	2 8 37.50	2.2641	11 34 40.4	15.223	8	4 0 25.77	2.4002	21 47 59.9	9.834
9	2 10 53.41	2.2662	11 49 51.4	15.143	9	4 2 49.87	2.4031	21 57 45.7	9.692
10	2 13 9.45	2.2685	12 4 57.6	15.062	10	4 5 14.14	2.4059	22 7 23.0	9.550
11	2 15 25.63	2.2708	12 19 58.9	14.979	11	4 7 38.58	2.4087	22 16 51.7	9.407
12	2 17 41.95	2.2732	12 34 55.1	14.894	12	4 10 3.18	2.4114	22 26 11.9	9.264
13	2 19 58.41	2.2755	12 49 46.2	14.809	13	4 12 27.95	2.4141	22 35 23.4	9.118
14	2 22 15.01	2.2779	13 4 32.2	14.722	14	4 14 52.87	2.4167	22 44 26.1	8.972
15	2 24 31.76	2.2804	13 19 12.9	14.633	15	4 17 17.95	2.4193	22 53 20.1	8.826
16	2 26 48.66	2.2829	13 33 48.2	14.542	16	4 19 43.19	2.4219	23 2 5.2	8.679
17	2 29 5.71	2.2855	13 48 18.0	14.451	17	4 22 8.58	2.4244	23 10 41.5	8.531
18	2 31 22.92	2.2881	14 2 42.3	14.358	18	4 24 34.12	2.4268	23 19 8.9	8.382
19	2 33 40.28	2.2907	14 17 0.9	14.263	19	4 26 59.80	2.4292	23 27 27.3	8.232
20	2 35 57.80	2.2933	14 31 13.8	14.167	20	4 29 25.63	2.4316	23 35 36.7	8.082
21	2 38 15.48	2.2960	14 45 20.9	14.069	21	4 31 51.60	2.4339	23 43 37.1	7.931
22	2 40 33.32	2.2988	14 59 22.1	13.970	22	4 34 17.70	2.4361	23 51 28.4	7.779
23	2 42 51.33	2.3016	15 13 17.3	13.869	23	4 36 43.93	2.4382	23 59 10.5	7.626
24	2 45 9.51	2.3044	N.15 27 6.4	13.767	24	4 39 10.29	2.4404	N.24 6 43.5	7.473

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 5.					MONDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	4 39 10.29	2.4404	N.24 6 43.5	7.473	0	6 37 10.82	2.4400	N.27 1 51.3	0.209
1	4 41 36.78	2.4425	24 14 7.3	7.319	1	6 39 37.15	2.4375	27 1 34.0	0.367
2	4 44 3.39	2.4444	24 21 21.8	7.165	2	6 42 3.32	2.4349	27 1 7.2	0.525
3	4 46 30.11	2.4463	24 28 27.1	7.011	3	6 44 29.33	2.4322	27 0 31.0	0.681
4	4 48 56.95	2.4482	24 35 23.1	6.855	4	6 46 55.18	2.4295	26 59 45.5	0.837
5	4 51 23.90	2.4500	24 42 9.7	6.698	5	6 49 20.87	2.4267	26 58 50.6	0.992
6	4 53 50.95	2.4517	24 48 46.9	6.542	6	6 51 46.39	2.4238	26 57 46.4	1.147
7	4 56 18.10	2.4533	24 55 14.7	6.385	7	6 54 11.73	2.4207	26 56 32.9	1.302
8	4 58 45.35	2.4549	25 1 33.1	6.227	8	6 56 36.88	2.4176	26 55 10.2	1.455
9	5 1 12.69	2.4563	25 7 42.0	6.069	9	6 59 1.84	2.4144	26 53 38.3	1.607
10	5 3 40.11	2.4577	25 13 41.4	5.910	10	7 1 26.61	2.4111	26 51 57.3	1.760
11	5 6 7.61	2.4590	25 19 31.2	5.751	11	7 3 51.17	2.4076	26 50 7.1	1.912
12	5 8 35.19	2.4602	25 25 11.5	5.592	12	7 6 15.52	2.4041	26 48 7.8	2.063
13	5 11 2.84	2.4614	25 30 42.2	5.432	13	7 8 39.66	2.4006	26 45 59.5	2.213
14	5 13 30.56	2.4624	25 36 3.3	5.272	14	7 11 3.59	2.3970	26 43 42.2	2.363
15	5 15 58.33	2.4633	25 41 14.8	5.112	15	7 13 27.30	2.3932	26 41 15.9	2.512
16	5 18 26.16	2.4642	25 46 16.7	4.951	16	7 15 50.78	2.3894	26 38 40.7	2.660
17	5 20 54.04	2.4650	25 51 8.9	4.790	17	7 18 14.03	2.3855	26 35 56.7	2.807
18	5 23 21.96	2.4657	25 55 51.5	4.629	18	7 20 37.04	2.3815	26 33 3.9	2.954
19	5 25 49.92	2.4663	26 0 24.4	4.467	19	7 22 59.81	2.3774	26 30 2.3	3.100
20	5 28 17.92	2.4668	26 4 47.6	4.305	20	7 25 22.33	2.3733	26 26 51.9	3.245
21	5 30 45.94	2.4672	26 9 1.0	4.143	21	7 27 44.61	2.3691	26 23 32.9	3.388
22	5 33 13.98	2.4675	26 13 4.7	3.981	22	7 30 6.63	2.3648	26 20 5.3	3.532
23	5 35 42.04	2.4677	N.26 16 58.7	3.819	23	7 32 28.39	2.3605	N.26 16 29.1	3.675
	SUNDAY 6.					TUESDAY 8.			
0	5 38 10.11	2.4679	N.26 20 43.0	3.657	0	7 34 49.89	2.3561	N.26 12 44.3	3.817
1	5 40 38.19	2.4679	26 24 17.5	3.494	1	7 37 11.12	2.3516	26 8 51.1	3.957
2	5 43 6.26	2.4677	26 27 42.3	3.332	2	7 39 32.08	2.3470	26 4 49.5	4.097
3	5 45 34.32	2.4675	26 30 57.4	3.170	3	7 41 52.76	2.3424	26 0 39.5	4.236
4	5 48 2.36	2.4672	26 34 2.7	3.007	4	7 44 13.17	2.3377	25 56 21.2	4.374
5	5 50 30.39	2.4669	26 36 58.2	2.844	5	7 46 33.29	2.3330	25 51 54.6	4.511
6	5 52 58.39	2.4664	26 39 44.0	2.682	6	7 48 53.13	2.3282	25 47 19.9	4.647
7	5 55 26.36	2.4658	26 42 20.1	2.520	7	7 51 12.68	2.3233	25 42 37.0	4.782
8	5 57 54.29	2.4651	26 44 46.4	2.358	8	7 53 31.93	2.3184	25 37 46.0	4.916
9	6 0 22.17	2.4643	26 47 3.0	2.196	9	7 55 50.89	2.3135	25 32 47.0	5.049
10	6 2 50.00	2.4634	26 49 9.9	2.033	10	7 58 9.55	2.3085	25 27 40.1	5.182
11	6 5 17.78	2.4624	26 51 7.0	1.871	11	8 0 27.91	2.3034	25 22 25.2	5.313
12	6 7 45.49	2.4612	26 52 54.4	1.709	12	8 2 45.96	2.2982	25 17 2.5	5.443
13	6 10 13.13	2.4600	26 54 32.1	1.548	13	8 5 3.70	2.2931	25 11 32.0	5.572
14	6 12 40.69	2.4587	26 56 0.1	1.387	14	8 7 21.13	2.2879	25 5 53.8	5.701
15	6 15 8.18	2.4574	26 57 18.5	1.226	15	8 9 38.25	2.2827	25 0 7.9	5.828
16	6 17 35.58	2.4558	26 58 27.2	1.065	16	8 11 55.05	2.2774	24 54 14.4	5.954
17	6 20 2.88	2.4542	26 59 26.3	0.904	17	8 14 11.54	2.2722	24 48 13.4	6.078
18	6 22 30.08	2.4524	27 0 15.7	0.743	18	8 16 27.71	2.2668	24 42 5.0	6.202
19	6 24 57.17	2.4506	27 0 55.5	0.583	19	8 18 43.55	2.2614	24 35 49.1	6.326
20	6 27 24.15	2.4487	27 1 25.7	0.424	20	8 20 59.07	2.2560	24 29 25.8	6.448
21	6 29 51.01	2.4466	27 1 46.4	0.265	21	8 23 14.27	2.2506	24 22 55.3	6.568
22	6 32 17.74	2.4445	27 1 57.5	+ 0.106	22	8 25 29.14	2.2451	24 16 17.6	6.688
23	6 34 44.35	2.4423	27 1 59.1	− 0.052	23	8 27 43.68	2.2395	24 9 32.7	6.808
24	6 37 10.82	2.4400	N.27 1 51.3	0.209	24	8 29 57.88	2.2339	N.24 2 40.6	6.927

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
	WEDNESDAY 9.					**FRIDAY 11.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	8 29 57.88	2.2339	N.24 2 40.6	6.927	0	10 10 47.37	1.9732	N.16 35 41.8	11.276
1	8 32 11.75	2.2284	23 55 41.5	7.043	1	10 12 45.62	1.9684	16 24 23.3	11.340
2	8 34 25.29	2.2229	23 48 35.5	7.158	2	10 14 43.58	1.9636	16 13 1.0	11.403
3	8 36 38.50	2.2173	23 41 22.6	7.272	3	10 16 41.25	1.9588	16 1 34.9	11.466
4	8 38 51.37	2.2117	23 34 2.9	7.385	4	10 18 38.64	1.9542	15 50 5.1	11.527
5	8 41 3.90	2.2061	23 26 36.4	7.497	5	10 20 35.76	1.9496	15 38 31.7	11.587
6	8 43 16.10	2.2005	23 19 3.2	7.609	6	10 22 32.60	1.9450	15 26 54.7	11.646
7	8 45 27.96	2.1948	23 11 23.3	7.719	7	10 24 29.16	1.9405	15 15 14.2	11.704
8	8 47 39.48	2.1892	23 3 36.9	7.827	8	10 26 25.46	1.9361	15 3 30.2	11.761
9	8 49 50.66	2.1835	22 55 44.0	7.935	9	10 28 21.49	1.9317	14 51 42.9	11.817
10	8 52 1.50	2.1778	22 47 44.7	8.042	10	10 30 17.26	1.9273	14 39 52.2	11.872
11	8 54 12.00	2.1722	22 39 39.0	8.148	11	10 32 12.77	1.9229	14 27 58.2	11.926
12	8 56 22.16	2.1665	22 31 27.0	8.252	12	10 34 8.01	1.9186	14 16 1.1	11.979
13	8 58 31.98	2.1608	22 23 8.8	8.355	13	10 36 3.00	1.9144	14 4 0.8	12.031
14	9 0 41.46	2.1552	22 14 44.4	8.457	14	10 37 57.74	1.9102	13 51 57.4	12.082
15	9 2 50.61	2.1496	22 6 13.9	8.558	15	10 39 52.23	1.9061	13 39 50.9	12.133
16	9 4 59.42	2.1439	21 57 37.4	8.658	16	10 41 46.47	1.9020	13 27 41.4	12.182
17	9 7 7.88	2.1382	21 48 54.9	8.757	17	10 43 40.47	1.8980	13 15 29.1	12.229
18	9 9 16.00	2.1325	21 40 6.5	8.855	18	10 45 34.23	1.8940	13 3 13.9	12.276
19	9 11 23.78	2.1269	21 31 12.3	8.952	19	10 47 27.75	1.8900	12 50 55.9	12.323
20	9 13 31.23	2.1213	21 22 12.3	9.047	20	10 49 21.04	1.8861	12 38 35.1	12.369
21	9 15 38.34	2.1157	21 13 6.6	9.142	21	10 51 14.09	1.8824	12 26 11.6	12.413
22	9 17 45.11	2.1101	21 3 55.3	9.235	22	10 53 6.92	1.8787	12 13 45.5	12.457
23	9 19 51.55	2.1045	N.20 54 38.4	9.327	23	10 54 59.53	1.8750	N.12 1 16.8	12.499
	THURSDAY 10.					**SATURDAY 12.**			
0	9 21 57.65	2.0989	N.20 45 16.1	9.418	0	10 56 51.92	1.8713	N.11 48 45.6	12.541
1	9 24 3.42	2.0934	20 35 48.3	9.508	1	10 58 44.09	1.8677	11 36 11.9	12.582
2	9 26 8.86	2.0878	20 26 15.1	9.596	2	11 0 36.05	1.8642	11 23 35.8	12.622
3	9 28 13.96	2.0822	20 16 36.7	9.683	3	11 2 27.80	1.8607	11 10 57.3	12.661
4	9 30 18.73	2.0767	20 6 53.1	9.770	4	11 4 19.34	1.8573	10 58 16.5	12.699
5	9 32 23.17	2.0713	19 57 4.3	9.857	5	11 6 10.68	1.8539	10 45 33.4	12.737
6	9 34 27.29	2.0659	19 47 10.3	9.942	6	11 8 1.81	1.8505	10 32 48.1	12.773
7	9 36 31.08	2.0605	19 37 11.3	10.024	7	11 9 52.74	1.8473	10 20 0.7	12.808
8	9 38 34.55	2.0551	19 27 7.4	10.106	8	11 11 43.49	1.8442	10 7 11.2	12.843
9	9 40 37.69	2.0497	19 16 58.6	10.187	9	11 13 34.05	1.8411	9 54 19.6	12.877
10	9 42 40.51	2.0444	19 6 44.9	10.268	10	11 15 24.42	1.8380	9 41 26.0	12.909
11	9 44 43.01	2.0391	18 56 26.4	10.346	11	11 17 14.61	1.8350	9 28 30.5	12.941
12	9 46 45.20	2.0338	18 46 3.3	10.424	12	11 19 4.62	1.8321	9 15 33.1	12.972
13	9 48 47.07	2.0285	18 35 35.5	10.502	13	11 20 54.46	1.8292	9 2 33.9	13.002
14	9 50 48.62	2.0232	18 25 3.1	10.577	14	11 22 44.12	1.8263	8 49 32.9	13.031
15	9 52 49.86	2.0181	18 14 26.3	10.651	15	11 24 33.61	1.8235	8 36 30.2	13.059
16	9 54 50.79	2.0130	18 3 45.0	10.725	16	11 26 22.94	1.8208	8 23 25.8	13.087
17	9 56 51.42	2.0079	17 52 59.3	10.798	17	11 28 12.11	1.8181	8 10 19.7	13.114
18	9 58 51.74	2.0028	17 42 9.2	10.870	18	11 30 1.11	1.8154	7 57 12.1	13.139
19	10 0 51.76	1.9978	17 31 14.9	10.940	19	11 31 49.96	1.8130	7 44 3.0	13.164
20	10 2 51.48	1.9927	17 20 16.4	11.009	20	11 33 38.67	1.8106	7 30 52.4	13.189
21	10 4 50.89	1.9877	17 9 13.8	11.077	21	11 35 27.23	1.8081	7 17 40.3	13.212
22	10 6 50.00	1.9829	16 58 7.1	11.145	22	11 37 15.64	1.8057	7 4 26.9	13.234
23	10 8 48.83	1.9781	16 46 56.4	11.211	23	11 39 3.91	1.8034	6 51 12.2	13.256
24	10 10 47.37	1.9732	N.16 35 41.8	11.276	24	11 40 52.05	1.8012	N. 6 37 56.2	13.277

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 13.					**TUESDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	11 40 52.05	1.8012	N. 6 37 56.2	13.277	0	13 5 54.85	1.7663	S. 4 8 26.4	13.365
1	11 42 40.05	1.7990	6 24 38.9	13.297	1	13 7 40.85	1.7671	4 21 47.8	13.349
2	11 44 27.93	1.7969	6 11 20.5	13.316	2	13 9 26.90	1.7680	4 35 8.2	13.332
3	11 46 15.68	1.7948	5 58 1.0	13.334	3	13 11 13.01	1.7689	4 48 27.6	13.314
4	11 48 3.31	1.7928	5 44 40.4	13.352	4	13 12 59.17	1.7698	5 1 45.9	13.295
5	11 49 50.82	1.7909	5 31 18.8	13.369	5	13 14 45.39	1.7709	5 15 3.0	13.275
6	11 51 38.22	1.7891	5 17 56.1	13.386	6	13 16 31.68	1.7721	5 28 18.9	13.255
7	11 53 25.51	1.7872	5 4 32.5	13.400	7	13 18 18.04	1.7732	5 41 33.6	13.234
8	11 55 12.69	1.7854	4 51 8.1	13.414	8	13 20 4.47	1.7744	5 54 47.0	13.213
9	11 56 59.76	1.7837	4 37 42.8	13.428	9	13 21 50.97	1.7757	6 7 59.2	13.192
10	11 58 46.73	1.7821	4 24 16.7	13.441	10	13 23 37.55	1.7771	6 21 10.0	13.168
11	12 0 33.61	1.7806	4 10 49.9	13.453	11	13 25 24.22	1.7785	6 34 19.4	13.144
12	12 2 20.40	1.7791	3 57 22.4	13.464	12	13 27 10.97	1.7799	6 47 27.3	13.120
13	12 4 7.10	1.7777	3 43 54.2	13.474	13	13 28 57.81	1.7815	7 0 33.8	13.095
14	12 5 53.72	1.7762	3 30 25.5	13.483	14	13 30 44.75	1.7831	7 13 38.7	13.068
15	12 7 40.25	1.7748	3 16 56.2	13.493	15	13 32 31.78	1.7848	7 26 42.0	13.041
16	12 9 26.70	1.7736	3 3 26.3	13.502	16	13 34 18.92	1.7865	7 39 43.7	13.014
17	12 11 13.08	1.7725	2 49 56.0	13.509	17	13 36 6.16	1.7882	7 52 43.7	12.987
18	12 12 59.40	1.7714	2 36 25.3	13.515	18	13 37 53.51	1.7901	8 5 42.1	12.958
19	12 14 45.65	1.7703	2 22 54.2	13.521	19	13 39 40.97	1.7920	8 18 38.7	12.928
20	12 16 31.84	1.7692	2 9 22.8	13.526	20	13 41 28.55	1.7940	8 31 33.5	12.898
21	12 18 17.96	1.7682	1 55 51.1	13.530	21	13 43 16.25	1.7960	8 44 26.5	12.867
22	12 20 4.03	1.7674	1 42 19.2	13.534	22	13 45 4.07	1.7981	8 57 17.6	12.835
23	12 21 50.05	1.7666	N. 1 28 47.1	13.537	23	13 46 52.02	1.8002	S. 9 10 6.7	12.802
	MONDAY 14.					**WEDNESDAY 16.**			
0	12 23 36.02	1.7658	N. 1 15 14.8	13.539	0	13 48 40.10	1.8024	S. 9 22 53.8	12.768
1	12 25 21.95	1.7651	1 1 42.4	13.540	1	13 50 28.31	1.8047	9 35 38.9	12.735
2	12 27 7.84	1.7645	0 48 10.0	13.540	2	13 52 16.66	1.8070	9 48 22.0	12.701
3	12 28 53.69	1.7639	0 34 37.6	13.540	3	13 54 5.15	1.8093	10 1 3.0	12.665
4	12 30 39.51	1.7634	0 21 5.2	13.539	4	13 55 53.78	1.8118	10 13 41.8	12.628
5	12 32 25.30	1.7630	N. 0 7 32.9	13.537	5	13 57 42.57	1.8144	10 26 18.4	12.591
6	12 34 11.07	1.7627	S. 0 5 59.2	13.534	6	13 59 31.51	1.8170	10 38 52.7	12.553
7	12 35 56.82	1.7623	0 19 31.2	13.531	7	14 1 20.61	1.8196	10 51 24.7	12.514
8	12 37 42.55	1.7620	0 33 3.0	13.528	8	14 3 9.86	1.8222	11 3 54.4	12.476
9	12 39 28.26	1.7618	0 46 34.5	13.523	9	14 4 59.27	1.8249	11 16 21.8	12.436
10	12 41 13.96	1.7617	1 0 5.7	13.518	10	14 6 48.85	1.8277	11 28 46.7	12.394
11	12 42 59.66	1.7616	1 13 36.6	13.512	11	14 8 38.60	1.8306	11 41 9.1	12.352
12	12 44 45.35	1.7615	1 27 7.1	13.504	12	14 10 28.52	1.8335	11 53 29.0	12.310
13	12 46 31.04	1.7616	1 40 37.1	13.496	13	14 12 18.62	1.8365	12 5 46.3	12.267
14	12 48 16.74	1.7617	1 54 6.6	13.488	14	14 14 8.90	1.8395	12 18 1.0	12.222
15	12 50 2.45	1.7619	2 7 35.7	13.480	15	14 15 59.36	1.8426	12 30 13.0	12.177
16	12 51 48.17	1.7622	2 21 4.2	13.470	16	14 17 50.01	1.8457	12 42 22.3	12.132
17	12 53 33.91	1.7625	2 34 32.1	13.459	17	14 19 40.85	1.8489	12 54 28.9	12.087
18	12 55 19.67	1.7628	2 47 59.3	13.448	18	14 21 31.88	1.8522	13 6 32.7	12.040
19	12 57 5.45	1.7632	3 1 25.8	13.436	19	14 23 23.11	1.8555	13 18 33.7	11.992
20	12 58 51.26	1.7637	3 14 51.6	13.423	20	14 25 14.54	1.8588	13 30 31.7	11.942
21	13 0 37.10	1.7643	3 28 16.6	13.409	21	14 27 6.17	1.8622	13 42 26.7	11.892
22	13 2 22.98	1.7650	3 41 40.7	13.395	22	14 28 58.01	1.8657	13 54 18.7	11.842
23	13 4 8.90	1.7656	3 55 4.0	13.381	23	14 30 50.06	1.8693	14 6 7.7	11.791
24	13 5 54.85	1.7663	S. 4 8 26.4	13.365	24	14 32 42.33	1.8729	S. 14 17 53.6	11.739

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 32 42.33	1.8729	S. 14 17 53.6	11.739
1	14 34 34.81	1.8765	14 29 36.3	11.686
2	14 36 27.51	1.8802	14 41 15.9	11.632
3	14 38 20.44	1.8840	14 52 52.2	11.577
4	14 40 13.59	1.8878	15 4 25.2	11.522
5	14 42 6.97	1.8916	15 15 54.9	11.466
6	14 44 0.58	1.8954	15 27 21.2	11.409
7	14 45 54.42	1.8994	15 38 44.0	11.352
8	14 47 48.51	1.9035	15 50 3.4	11.293
9	14 49 42.84	1.9076	16 1 19.2	11.233
10	14 51 37.42	1.9117	16 12 31.4	11.173
11	14 53 32.24	1.9158	16 23 40.0	11.111
12	14 55 27.31	1.9200	16 34 44.8	11.049
13	14 57 22.64	1.9242	16 45 45.9	10.987
14	14 59 18.22	1.9285	16 56 43.2	10.923
15	15 1 14.06	1.9329	17 7 36.7	10.858
16	15 3 10.17	1.9373	17 18 26.2	10.793
17	15 5 6.54	1.9417	17 29 11.8	10.727
18	15 7 3.18	1.9462	17 39 53.4	10.659
19	15 9 0.09	1.9507	17 50 30.9	10.591
20	15 10 57.27	1.9553	18 1 4.3	10.522
21	15 12 54.73	1.9600	18 11 33.5	10.452
22	15 14 52.47	1.9647	18 21 58.5	10.381
23	15 16 50.49	1.9694	S. 18 32 19.2	10.309

FRIDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 18 48.79	1.9741	S. 18 42 35.6	10.237
1	15 20 47.38	1.9789	18 52 47.6	10.163
2	15 22 46.26	1.9837	19 2 55.2	10.088
3	15 24 45.42	1.9885	19 12 58.2	10.012
4	15 26 44.88	1.9935	19 22 56.6	9.936
5	15 28 44.64	1.9984	19 32 50.5	9.859
6	15 30 44.69	2.0033	19 42 39.7	9.781
7	15 32 45.04	2.0084	19 52 24.2	9.702
8	15 34 45.70	2.0135	20 2 3.9	9.621
9	15 36 46.66	2.0186	20 11 38.9	9.539
10	15 38 47.93	2.0237	20 21 8.6	9.457
11	15 40 49.50	2.0288	20 30 33.6	9.375
12	15 42 51.38	2.0339	20 39 53.6	9.291
13	15 44 53.57	2.0391	20 49 8.5	9.206
14	15 46 56.08	2.0444	20 58 18.3	9.120
15	15 48 58.90	2.0497	21 7 22.9	9.033
16	15 51 2.04	2.0550	21 16 22.3	8.946
17	15 53 5.50	2.0602	21 25 16.4	8.857
18	15 55 9.27	2.0655	21 34 5.1	8.767
19	15 57 13.36	2.0709	21 42 48.4	8.677
20	15 59 17.78	2.0764	21 51 26.3	8.585
21	16 1 22.53	2.0818	21 59 58.6	8.492
22	16 3 27.60	2.0872	22 8 25.3	8.398
23	16 5 33.00	2.0927	22 16 46.4	8.303
24	16 7 38.72	2.0981	S. 22 25 1.7	8.208

SATURDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 7 38.72	2.0981	S. 22 25 1.7	8.208
1	16 9 44.77	2.1036	22 33 11.3	8.112
2	16 11 51.15	2.1090	22 41 15.1	8.013
3	16 13 57.85	2.1145	22 49 12.9	7.914
4	16 16 4.89	2.1201	22 57 4.8	7.815
5	16 18 12.26	2.1256	23 4 50.7	7.714
6	16 20 19.96	2.1311	23 12 30.5	7.612
7	16 22 27.99	2.1366	23 20 4.2	7.510
8	16 24 36.35	2.1422	23 27 31.7	7.406
9	16 26 45.05	2.1477	23 34 52.9	7.301
10	16 28 54.08	2.1532	23 42 7.8	7.196
11	16 31 3.44	2.1588	23 49 16.4	7.089
12	16 33 13.14	2.1644	23 56 18.5	6.981
13	16 35 23.17	2.1699	24 3 14.1	6.872
14	16 37 33.53	2.1754	24 10 3.2	6.762
15	16 39 44.22	2.1809	24 16 45.6	6.651
16	16 41 55.24	2.1864	24 23 21.3	6.539
17	16 44 6.59	2.1919	24 29 50.3	6.427
18	16 46 18.27	2.1974	24 36 12.6	6.314
19	16 48 30.28	2.2029	24 42 28.0	6.198
20	16 50 42.62	2.2084	24 48 36.4	6.082
21	16 52 55.29	2.2139	24 54 37.8	5.965
22	16 55 8.29	2.2193	25 0 32.2	5.847
23	16 57 21.61	2.2248	S. 25 6 19.5	5.728

SUNDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 59 35.26	2.2302	S. 25 11 59.6	5.608
1	17 1 49.23	2.2355	25 17 32.5	5.487
2	17 4 3.52	2.2408	25 22 58.1	5.366
3	17 6 18.13	2.2462	25 28 16.4	5.243
4	17 8 33.06	2.2515	25 33 27.3	5.119
5	17 10 48.31	2.2567	25 38 30.7	4.994
6	17 13 3.87	2.2620	25 43 26.6	4.868
7	17 15 19.75	2.2672	25 48 14.9	4.742
8	17 17 35.94	2.2723	25 52 55.6	4.614
9	17 19 52.43	2.2774	25 57 28.6	4.485
10	17 22 9.23	2.2825	26 1 53.8	4.356
11	17 24 26.33	2.2876	26 6 11.3	4.226
12	17 26 43.74	2.2927	26 10 20.9	4.094
13	17 29 1.45	2.2976	26 14 22.6	3.962
14	17 31 19.45	2.3024	26 18 16.3	3.828
15	17 33 37.74	2.3073	26 22 1.9	3.693
16	17 35 56.32	2.3121	26 25 39.5	3.558
17	17 38 15.19	2.3168	26 29 8.9	3.422
18	17 40 34.34	2.3215	26 32 30.1	3.284
19	17 42 53.77	2.3262	26 35 43.0	3.146
20	17 45 13.48	2.3308	26 38 47.7	3.008
21	17 47 33.47	2.3353	26 41 44.0	2.868
22	17 49 53.72	2.3398	26 44 31.9	2.728
23	17 52 14.24	2.3442	26 47 11.4	2.587
24	17 54 35.02	2.3485	S. 26 49 42.3	2.444

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 21.			
	h m s	s	° ′ ″	″
0	17 54 35.02	2.3485	S.26 49 42.3	2.444
1	17 56 56.06	2.3527	26 52 4.7	2.301
2	17 59 17.35	2.3570	26 54 18.5	2.157
3	18 1 38.90	2.3612	26 56 23.6	2.012
4	18 4 0.69	2.3652	26 58 20.0	1.867
5	18 6 22.72	2.3692	27 0 7.6	1.721
6	18 8 44.99	2.3731	27 1 46.5	1.574
7	18 11 7.49	2.3769	27 3 16.5	1.426
8	18 13 30.22	2.3807	27 4 37.6	1.277
9	18 15 53.17	2.3843	27 5 49.8	1.128
10	18 18 16.34	2.3879	27 6 53.0	0.978
11	18 20 39.72	2.3914	27 7 47.2	0.828
12	18 23 3.31	2.3948	27 8 32.4	0.677
13	18 25 27.10	2.3982	27 9 8.5	0.525
14	18 27 51.10	2.4016	27 9 35.4	0.372
15	18 30 15.29	2.4047	27 9 53.1	0.218
16	18 32 39.67	2.4078	27 10 1.6	− 0.065
17	18 35 4.23	2.4108	27 10 0.9	+ 0.089
18	18 37 28.96	2.4137	27 9 50.9	0.244
19	18 39 53.87	2.4166	27 9 31.6	0.400
20	18 42 18.95	2.4193	27 9 2.9	0.556
21	18 44 44.18	2.4219	27 8 24.9	0.712
22	18 47 9.57	2.4245	27 7 37.5	0.869
23	18 49 35.12	2.4270	S.27 6 40.6	1.026
	TUESDAY 22.			
0	18 52 0.81	2.4293	S.27 5 34.3	1.184
1	18 54 26.64	2.4316	27 4 18.5	1.343
2	18 56 52.60	2.4337	27 2 53.1	1.502
3	18 59 18.69	2.4358	27 1 18.2	1.662
4	19 1 44.90	2.4378	26 59 33.7	1.821
5	19 4 11.23	2.4396	26 57 39.7	1.980
6	19 6 37.66	2.4414	26 55 36.1	2.141
7	19 9 4.20	2.4432	26 53 22.8	2.302
8	19 11 30.84	2.4447	26 50 59.9	2.463
9	19 13 57.57	2.4462	26 48 27.3	2.624
10	19 16 24.38	2.4476	26 45 45.0	2.786
11	19 18 51.28	2.4489	26 42 53.0	2.947
12	19 21 18.25	2.4501	26 39 51.4	3.109
13	19 23 45.29	2.4512	26 36 40.0	3.271
14	19 26 12.39	2.4522	26 33 18.9	3.433
15	19 28 39.55	2.4531	26 29 48.1	3.595
16	19 31 6.76	2.4539	26 26 7.5	3.757
17	19 33 34.02	2.4547	26 22 17.2	3.920
18	19 36 1.32	2.4553	26 18 17.1	4.082
19	19 38 28.65	2.4558	26 14 7.3	4.245
20	19 40 56.01	2.4562	26 9 47.7	4.408
21	19 43 23.39	2.4564	26 5 18.3	4.571
22	19 45 50.78	2.4566	26 0 39.2	4.733
23	19 48 18.19	2.4568	25 55 50.4	4.896
24	19 50 45.60	2.4568	S.25 50 51.8	5.057

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 23.			
	h m s	s	° ′ ″	″
0	19 50 45.60	2.4568	S.25 50 51.8	5.057
1	19 53 13.01	2.4568	25 45 43.5	5.220
2	19 55 40.42	2.4567	25 40 25.4	5.382
3	19 58 7.81	2.4564	25 34 57.6	5.544
4	20 0 35.19	2.4561	25 29 20.1	5.706
5	20 3 2.55	2.4557	25 23 32.9	5.867
6	20 5 29.88	2.4552	25 17 36.0	6.029
7	20 7 57.17	2.4546	25 11 29.4	6.190
8	20 10 24.43	2.4540	25 5 13.2	6.350
9	20 12 51.65	2.4532	24 58 47.4	6.511
10	20 15 18.82	2.4524	24 52 11.9	6.672
11	20 17 45.94	2.4515	24 45 26.8	6.831
12	20 20 13.00	2.4505	24 38 32.2	6.990
13	20 22 40.00	2.4494	24 31 28.0	7.149
14	20 25 6.93	2.4483	24 24 14.3	7.308
15	20 27 33.79	2.4471	24 16 51.1	7.466
16	20 30 0.58	2.4457	24 9 18.4	7.624
17	20 32 27.28	2.4443	24 1 36.3	7.781
18	20 34 53.90	2.4429	23 53 44.7	7.937
19	20 37 20.43	2.4414	23 45 43.8	8.093
20	20 39 46.87	2.4399	23 37 33.5	8.249
21	20 42 13.22	2.4383	23 29 13.9	8.404
22	20 44 39.47	2.4366	23 20 45.0	8.558
23	20 47 5.61	2.4348	S.23 12 6.9	8.712
	THURSDAY 24.			
0	20 49 31.64	2.4329	S.23 3 19.6	8.864
1	20 51 57.56	2.4311	22 54 23.2	9.016
2	20 54 23.37	2.4292	22 45 17.7	9.168
3	20 56 49.06	2.4272	22 36 3.0	9.320
4	20 59 14.63	2.4251	22 26 39.3	9.469
5	21 1 40.07	2.4230	22 17 6.7	9.618
6	21 4 5.39	2.4209	22 7 25.2	9.766
7	21 6 30.58	2.4187	21 57 34.8	9.913
8	21 8 55.64	2.4165	21 47 35.6	10.060
9	21 11 20.56	2.4142	21 37 27.6	10.206
10	21 13 45.34	2.4119	21 27 10.9	10.351
11	21 16 9.99	2.4096	21 16 45.5	10.494
12	21 18 34.50	2.4072	21 6 11.6	10.637
13	21 20 58.86	2.4047	20 55 29.1	10.779
14	21 23 23.07	2.4023	20 44 38.1	10.920
15	21 25 47.14	2.3999	20 33 38.7	11.060
16	21 28 11.06	2.3974	20 22 30.9	11.199
17	21 30 34.83	2.3948	20 11 14.8	11.337
18	21 32 58.44	2.3923	19 59 50.5	11.473
19	21 35 21.90	2.3898	19 48 18.0	11.609
20	21 37 45.21	2.3872	19 36 37.4	11.744
21	21 40 8.36	2.3845	19 24 48.7	11.877
22	21 42 31.35	2.3818	19 12 52.1	12.009
23	21 44 54.18	2.3792	19 0 47.6	12.140
24	21 47 16.86	2.3766	S.18 48 35.3	12.269

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 25.					**SUNDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	21 47 16.86	2.3766	S. 18 48 35.3	12.269	0	23 38 31.87	2.2709	S. 6 57 9.9	16.751
1	21 49 39.38	2.3739	18 36 15.3	12.398	1	23 40 48.09	2.2697	6 40 23.3	16.802
2	21 52 1.73	2.3713	18 23 47.5	12.527	2	23 43 4.24	2.2687	6 23 33.7	16.852
3	21 54 23.93	2.3687	18 11 12.1	12.653	3	23 45 20.33	2.2677	6 6 41.1	16.899
4	21 56 45.97	2.3660	17 58 29.2	12.777	4	23 47 36.36	2.2667	5 49 45.8	16.944
5	21 59 7.85	2.3632	17 45 38.9	12.900	5	23 49 52.33	2.2657	5 32 47.8	16.987
6	22 1 29.56	2.3605	17 32 41.2	13.022	6	23 52 8.25	2.2649	5 15 47.3	17.029
7	22 3 51.11	2.3579	17 19 36.2	13.143	7	23 54 24.12	2.2641	4 58 44.3	17.068
8	22 6 12.51	2.3553	17 6 24.0	13.262	8	23 56 39.94	2.2633	4 41 39.1	17.105
9	22 8 33.75	2.3526	16 53 4.7	13.381	9	23 58 55.72	2.2627	4 24 31.7	17.141
10	22 10 54.82	2.3499	16 39 38.3	13.498	10	0 1 11.47	2.2621	4 7 22.2	17.174
11	22 13 15.74	2.3473	16 26 4.9	13.613	11	0 3 27.18	2.2616	3 50 10.8	17.206
12	22 15 36.50	2.3447	16 12 24.7	13.727	12	0 5 42.86	2.2612	3 32 57.5	17.236
13	22 17 57.10	2.3421	15 58 37.7	13.839	13	0 7 58.52	2.2608	3 15 42.5	17.263
14	22 20 17.55	2.3395	15 44 44.0	13.951	14	0 10 14.16	2.2604	2 58 25.9	17.288
15	22 22 37.84	2.3368	15 30 43.6	14.061	15	0 12 29.77	2.2601	2 41 7.9	17.312
16	22 24 57.97	2.3342	15 16 36.7	14.168	16	0 14 45.37	2.2600	2 23 48.5	17.333
17	22 27 17.95	2.3317	15 2 23.4	14.274	17	0 17 0.97	2.2599	2 6 27.9	17.353
18	22 29 37.78	2.3292	14 48 3.8	14.379	18	0 19 16.56	2.2598	1 49 6.1	17.371
19	22 31 57.46	2.3267	14 33 37.9	14.483	19	0 21 32.15	2.2599	1 31 43.4	17.386
20	22 34 16.99	2.3242	14 19 5.8	14.585	20	0 23 47.75	2.2600	1 14 19.8	17.399
21	22 36 36.37	2.3217	14 4 27.7	14.685	21	0 26 3.35	2.2601	0 56 55.5	17.411
22	22 38 55.60	2.3193	13 49 43.6	14.784	22	0 28 18.96	2.2603	0 39 30.5	17.420
23	22 41 14.69	2.3170	S. 13 34 53.6	14.881	23	0 30 34.59	2.2606	S. 0 22 5.1	17.427
	SATURDAY 26.					**MONDAY 28.**			
0	22 43 33.64	2.3146	S. 13 19 57.9	14.976	0	0 32 50.24	2.2610	S. 0 4 39.3	17.432
1	22 45 52.44	2.3123	13 4 56.5	15.071	1	0 35 5.91	2.2614	N. 0 12 46.7	17.435
2	22 48 11.11	2.3100	12 49 49.4	15.163	2	0 37 21.61	2.2620	0 30 12.9	17.437
3	22 50 29.64	2.3077	12 34 36.9	15.253	3	0 39 37.35	2.2626	0 47 39.1	17.436
4	22 52 48.03	2.3055	12 19 19.0	15.342	4	0 41 53.12	2.2632	1 5 5.2	17.432
5	22 55 6.30	2.3034	12 3 55.8	15.430	5	0 44 8.93	2.2639	1 22 31.0	17.427
6	22 57 24.44	2.3013	11 48 27.4	15.516	6	0 46 24.79	2.2647	1 39 56.4	17.419
7	22 59 42.45	2.2992	11 32 53.9	15.600	7	0 48 40.69	2.2655	1 57 21.3	17.410
8	23 2 0.34	2.2971	11 17 15.4	15.682	8	0 50 56.65	2.2665	2 14 45.6	17.399
9	23 4 18.10	2.2950	11 1 32.1	15.762	9	0 53 12.67	2.2675	2 32 9.2	17.386
10	23 6 35.74	2.2931	10 45 44.0	15.841	10	0 55 28.75	2.2686	2 49 31.9	17.370
11	23 8 53.27	2.2912	10 29 51.2	15.917	11	0 57 44.90	2.2697	3 6 53.6	17.353
12	23 11 10.68	2.2893	10 13 53.9	15.992	12	1 0 1.12	2.2709	3 24 14.3	17.334
13	23 13 27.98	2.2874	9 57 52.1	16.066	13	1 2 17.41	2.2722	3 41 33.7	17.312
14	23 15 45.17	2.2857	9 41 46.0	16.137	14	1 4 33.78	2.2735	3 58 51.7	17.288
15	23 18 2.26	2.2840	9 25 35.6	16.207	15	1 6 50.23	2.2749	4 16 8.2	17.262
16	23 20 19.25	2.2823	9 9 21.1	16.275	16	1 9 6.77	2.2764	4 33 23.1	17.234
17	23 22 36.14	2.2807	8 53 2.6	16.341	17	1 11 23.40	2.2779	4 50 36.3	17.205
18	23 24 52.93	2.2791	8 36 40.2	16.405	18	1 13 40.12	2.2795	5 7 47.7	17.173
19	23 27 9.63	2.2776	8 20 14.0	16.467	19	1 15 56.94	2.2812	5 24 57.1	17.139
20	23 29 26.24	2.2762	8 3 44.1	16.528	20	1 18 13.87	2.2830	5 42 4.4	17.102
21	23 31 42.77	2.2748	7 47 10.6	16.587	21	1 20 30.90	2.2848	5 59 9.4	17.064
22	23 33 59.21	2.2734	7 30 33.7	16.643	22	1 22 48.04	2.2866	6 16 12.1	17.024
23	23 36 15.58	2.2721	7 13 53.4	16.698	23	1 25 5.29	2.2885	6 33 12.3	16.982
24	23 38 31.87	2.2709	S. 6 57 9.9	16.751	24	1 27 22.66	2.2905	N. 6 50 9.9	16.938

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 27 22.66	2.2905	N. 6 50 9.9	16.938
1	1 29 40.15	2.2926	7 7 4.8	16.892
2	1 31 57.77	2.2947	7 23 56.9	16.843
3	1 34 15.52	2.2969	7 40 46.0	16.792
4	1 36 33.40	2.2992	7 57 32.0	16.740
5	1 38 51.42	2.3014	8 14 14.8	16.686
6	1 41 9.57	2.3037	8 30 54.3	16.629
7	1 43 27.87	2.3062	8 47 30.3	16.571
8	1 45 46.32	2.3087	9 4 2.8	16.511
9	1 48 4.91	2.3112	9 20 31.6	16.448
10	1 50 23.66	2.3137	9 36 56.6	16.383
11	1 52 42.56	2.3163	9 53 17.6	16.317
12	1 55 1.62	2.3190	10 9 34.6	16.248
13	1 57 20.84	2.3218	10 25 47.4	16.178
14	1 59 40.23	2.3246	10 41 56.0	16.106
15	2 1 59.79	2.3274	10 58 0.2	16.032
16	2 4 19.52	2.3302	11 13 59.8	15.955
17	2 6 39.42	2.3332	11 29 54.8	15.877
18	2 8 59.50	2.3362	11 45 45.1	15.797
19	2 11 19.76	2.3392	12 1 30.5	15.715
20	2 13 40.20	2.3422	12 17 10.9	15.631
21	2 16 0.82	2.3453	12 32 46.2	15.545
22	2 18 21.63	2.3484	12 48 16.3	15.457
23	2 20 42.63	2.3515	N.13 3 41.1	15.368

WEDNESDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 23 3.81	2.3547	N.13 19 0.5	15.277
1	2 25 25.19	2.3579	13 34 14.3	15.183
2	2 27 46.76	2.3612	13 49 22.5	15.088
3	2 30 8.53	2.3645	14 4 24.9	14.991
4	2 32 30.50	2.3678	14 19 21.4	14.892
5	2 34 52.67	2.3712	14 34 12.0	14.792
6	2 37 15.04	2.3746	14 48 56.5	14.690
7	2 39 37.62	2.3780	15 3 34.8	14.586
8	2 42 0.40	2.3813	15 18 6.8	14.479
9	2 44 23.38	2.3847	15 32 32.3	14.371
10	2 46 46.57	2.3882	15 46 51.3	14.262
11	2 49 9.97	2.3917	16 1 3.8	14.151
12	2 51 33.57	2.3951	16 15 9.5	14.038
13	2 53 57.38	2.3986	16 29 8.4	13.924
14	2 56 21.41	2.4021	16 43 0.4	13.808
15	2 58 45.64	2.4056	16 56 45.4	13.691
16	3 1 10.08	2.4092	17 10 23.3	13.571
17	3 3 34.74	2.4127	17 23 53.9	13.449
18	3 5 59.61	2.4162	17 37 17.2	13.327
19	3 8 24.69	2.4197	17 50 33.1	13.203
20	3 10 49.98	2.4232	18 3 41.5	13.078
21	3 13 15.48	2.4267	18 16 42.4	12.951
22	3 15 41.19	2.4302	18 29 35.6	12.822
23	3 18 7.11	2.4337	18 42 21.0	12.691
24	3 20 33.24	2.4372	N.18 54 58.5	12.559

THURSDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	3 20 33.24	2.4372	N.18 54 58.5	12.559
1	3 22 59.58	2.4407	19 7 28.1	12.426
2	3 25 26.13	2.4442	19 19 49.6	12.291
3	3 27 52.88	2.4476	19 32 3.0	12.155
4	3 30 19.84	2.4510	19 44 8.2	12.017
5	3 32 47.00	2.4543	19 56 5.1	11.878
6	3 35 14.36	2.4577	20 7 53.6	11.738
7	3 37 41.92	2.4610	20 19 33.7	11.597
8	3 40 9.68	2.4643	20 31 5.2	11.453
9	3 42 37.64	2.4676	20 42 28.1	11.309
10	3 45 5.79	2.4708	20 53 42.3	11.164
11	3 47 34.14	2.4741	21 4 47.8	11.017
12	3 50 2.68	2.4773	21 15 44.4	10.869
13	3 52 31.41	2.4803	21 26 32.1	10.720
14	3 55 0.32	2.4833	21 37 10.8	10.570
15	3 57 29.41	2.4863	21 47 40.5	10.419
16	3 59 58.68	2.4893	21 58 1.1	10.266
17	4 2 28.12	2.4922	22 8 12.4	10.111
18	4 4 57.74	2.4951	22 18 14.4	9.956
19	4 7 27.53	2.4978	22 28 7.1	9.801
20	4 9 57.48	2.5005	22 37 50.5	9.645
21	4 12 27.59	2.5032	22 47 24.5	9.487
22	4 14 57.86	2.5058	22 56 49.0	9.328
23	4 17 28.28	2.5083	N.23 6 3.9	9.168

FRIDAY, APRIL 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	4 19 58.86	2.5108	N.23 15 9.1	9.007

PHASES OF THE MOON.

			d	h	m
☽	First Quarter .	March	5	7	14.3
○	Full Moon		13	0	55.4
☾	Last Quarter		21	5	16 3
●	New Moon		28	1	17.8

			d	h
☾	Apogee . . .	March	15	9.7
☾	Perigee		28	10.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	SUN	W.	32° 57′ 6″	2409	34° 40′ 28″	2412	36° 23′ 46″	2416	38° 6′ 58″	2421
	JUPITER	W.	18 3 24	2184	19 52 16	2181	21 41 12	2182	23 30 7	2164
	Aldebaran	E.	53 56 3	2111	52 5 20	2120	50 14 51	2130	48 24 38	2141
	Pollux	E.	97 45 52	2061	95 53 53	2068	94 2 4	2075	92 10 26	2082
2	SUN	W.	46 40 45	2460	48 22 55	2469	50 4 52	2480	51 46 34	2491
	JUPITER	W.	32 33 8	2215	34 21 13	2225	36 9 4	2234	37 56 41	2244
	Aldebaran	E.	39 18 13	2212	37 30 4	2231	35 42 23	2251	33 55 11	2272
	Pollux	E.	82 55 25	2128	81 5 8	2139	79 15 8	2149	77 25 24	2161
3	SUN	W.	60 11 0	2552	61 51 1	2566	63 30 43	2580	65 10 6	2593
	VENUS	W.	21 30 6	2622	23 8 31	2634	24 46 40	2646	26 24 33	2657
	Pollux	E.	68 21 14	2223	66 33 20	2236	64 45 46	2249	62 58 32	2263
	Regulus	E.	104 44 32	2234	102 56 55	2247	101 9 37	2260	99 22 38	2273
4	SUN	W.	73 22 9	2666	74 59 34	2682	76 36 38	2697	78 13 22	2712
	VENUS	W.	34 29 39	2725	36 5 45	2741	37 41 31	2755	39 16 58	2769
	α Arietis	W.	23 24 1	2868	24 57 1	2817	26 31 7	2777	28 6 5	2747
	Pollux	E.	54 7 29	2334	52 22 19	2348	50 37 30	2363	48 53 2	2378
	Regulus	E.	90 32 45	2343	88 47 48	2357	87 3 11	2371	85 18 55	2386
5	SUN	W.	86 12 0	2788	87 46 43	2803	89 21 7	2818	90 55 11	2834
	VENUS	W.	47 9 21	2845	48 42 51	2860	50 16 1	2874	51 48 53	2890
	α Arietis	W.	36 8 19	2678	37 45 29	2675	39 22 43	2674	40 59 58	2674
	Pollux	E.	40 15 58	2451	38 33 36	2466	36 51 35	2481	35 9 55	2495
	Regulus	E.	76 42 47	2458	75 0 35	2472	73 18 43	2487	71 37 11	2502
	SATURN	E.	105 56 45	2421	104 13 40	2435	102 30 55	2449	100 48 30	2463
6	SUN	W.	98 40 41	2907	100 12 51	2922	101 44 42	2936	103 16 15	2950
	VENUS	W.	59 28 26	2963	60 59 25	2977	62 30 6	2991	64 0 30	3005
	α Arietis	W.	49 5 27	2695	50 42 13	2702	52 18 50	2709	53 55 18	2717
	Regulus	E.	63 14 31	2572	61 34 57	2585	59 55 42	2599	58 16 46	2612
	SATURN	E.	92 21 16	2530	90 40 45	2544	89 0 33	2557	87 20 39	2569
7	SUN	W.	110 49 42	3018	112 19 33	3030	113 49 8	3043	115 18 27	3056
	VENUS	W.	71 28 13	3072	72 56 57	3085	74 25 25	3097	75 53 38	3110
	α Arietis	W.	61 54 55	2759	63 30 17	2768	65 5 27	2777	66 40 25	2785
	Aldebaran	W.	31 23 30	2777	32 58 28	2778	34 33 25	2780	36 8 19	2783
	Regulus	E.	50 6 38	2679	48 29 30	2692	46 52 40	2705	45 16 7	2718
	SATURN	E.	79 5 26	2631	77 27 13	2643	75 49 16	2655	74 11 35	2666
8	SUN	W.	122 41 13	3116	124 9 3	3128	125 36 39	3139	127 4 1	3151
	α Arietis	W.	74 32 19	2831	76 6 7	2840	77 39 43	2849	79 13 7	2858
	Aldebaran	W.	44 1 16	2812	45 35 28	2819	47 9 31	2825	48 43 26	2832
	Regulus	E.	37 17 38	2783	35 42 48	2796	34 8 15	2809	32 33 59	2824
	SATURN	E.	66 6 52	2719	64 30 38	2730	62 54 38	2740	61 18 51	2749
	Spica	E.	91 16 53	2756	89 41 28	2766	88 6 16	2776	86 31 17	2786
9	α Arietis	W.	86 57 19	2901	88 29 36	2910	90 1 42	2918	91 33 38	2927
	Aldebaran	W.	56 30 45	2867	58 3 46	2875	59 36 37	2882	61 9 19	2889
	SATURN	E.	53 23 2	2795	51 48 28	2804	50 14 5	2813	48 39 54	2821
	Spica	E.	78 39 31	2833	77 5 46	2842	75 32 12	2851	73 58 50	2859

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
1	Sun	W.	39° 50′ 3″	2427	41° 32′ 59″	2433	43° 15′ 46″	2442	44° 58′ 21″	2450
	Jupiter	W.	25 18 59	2188	27 7 45	2193	28 56 23	2200	30 44 51	2207
	Aldebaran	E.	46 34 41	2153	44 45 3	2166	42 55 44	2180	41 6 47	2196
	Pollux	E.	90 18 59	2090	88 27 45	2099	86 36 44	2108	84 45 57	2118
2	Sun	W.	53 28 0	2502	55 9 10	2514	56 50 4	2526	58 30 41	2539
	Jupiter	W.	39 44 3	2255	41 31 9	2266	43 17 58	2278	45 4 30	2291
	Aldebaran	E.	32 8 31	2296	30 22 25	2324	28 37 0	2353	26 52 18	2387
	Pollux	E.	75 35 58	2172	73 46 49	2185	71 57 59	2197	70 9 27	2210
3	Sun	W.	66 49 10	2608	68 27 54	2622	70 6 19	2637	71 44 24	2652
	Venus	W.	28 2 10	2671	29 39 29	2684	31 16 31	2698	32 53 14	2711
	Pollux	E.	61 11 38	2277	59 25 5	2291	57 38 52	2305	55 53 0	2320
	Regulus	E.	97 35 59	2287	95 49 40	2300	94 3 41	2315	92 18 3	2328
4	Sun	W.	79 49 46	2727	81 25 50	2743	83 1 33	2757	84 36 57	2773
	Venus	W.	40 52 6	2785	42 26 54	2799	44 1 23	2815	45 35 32	2830
	α Arietis	W.	29 41 43	2722	31 17 53	2705	32 54 26	2692	34 31 17	2684
	Pollux	E.	47 8 55	2393	45 25 10	2407	43 41 45	2422	41 58 41	2436
	Regulus	E.	83 35 0	2401	81 51 26	2415	80 8 12	2429	78 25 19	2444
5	Sun	W.	92 28 55	2848	94 2 20	2863	95 35 26	2878	97 8 13	2893
	Venus	W.	53 21 25	2905	54 53 38	2919	56 25 33	2934	57 57 9	2949
	α Arietis	W.	42 37 13	2676	44 14 25	2680	45 51 32	2684	47 28 33	2689
	Pollux	E.	33 28 35	2510	31 47 36	2525	30 6 58	2540	28 26 41	2555
	Regulus	E.	69 56 0	2515	68 15 8	2530	66 34 36	2544	64 54 24	2558
	Saturn	E.	99 6 25	2477	97 24 39	2491	95 43 13	2504	94 2 5	2517
6	Sun	W.	104 47 31	2964	106 18 29	2977	107 49 10	2991	109 19 34	3004
	Venus	W.	65 30 36	3019	67 0 25	3033	68 29 57	3046	69 59 13	3059
	α Arietis	W.	55 31 35	2725	57 7 41	2733	58 43 37	2741	60 19 22	2750
	Regulus	E.	56 38 8	2626	54 59 48	2640	53 21 47	2653	51 44 4	2666
	Saturn	E.	85 41 2	2582	84 1 42	2595	82 22 40	2607	80 43 55	2619
7	Sun	W.	116 47 30	3069	118 16 18	3081	119 44 51	3093	121 13 9	3105
	Venus	W.	77 21 36	3122	78 49 19	3133	80 16 48	3146	81 44 2	3158
	α Arietis	W.	68 15 12	2795	69 49 46	2604	71 24 9	2813	72 58 20	2822
	Aldebaran	W.	37 43 9	2788	39 17 52	2794	40 52 28	2800	42 26 56	2806
	Regulus	E.	43 39 51	2731	42 3 52	2744	40 28 10	2756	38 52 45	2770
	Saturn	E.	72 34 9	2677	70 56 58	2688	69 20 2	2698	67 43 20	2709
8	Sun	W.	128 31 9	3162	129 58 4	3173	131 24 46	3183	132 51 15	3194
	α Arietis	W.	80 46 20	2866	82 19 22	2876	83 52 12	2884	85 24 51	2893
	Aldebaran	W.	50 17 12	2839	51 50 49	2846	53 24 17	2853	54 57 36	2861
	Regulus	E.	31 0 2	2838	29 26 23	2853	27 53 4	2869	26 20 5	2886
	Saturn	E.	59 43 16	2759	58 7 54	2769	56 32 45	2778	54 57 48	2786
	Spica	E.	84 56 31	2796	83 21 58	2805	81 47 37	2815	80 13 28	2824
9	α Arietis	W.	93 5 23	2935	94 36 58	2943	96 8 22	2951	97 39 36	2960
	Aldebaran	W.	62 41 52	2896	64 14 16	2902	65 46 32	2909	67 18 39	2916
	Saturn	E.	47 5 53	2829	45 32 3	2837	43 58 23	2845	42 24 54	2852
	Spica	E.	72 25 38	2867	70 52 37	2875	69 19 46	2883	67 47 6	2891

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Aldebaran	W.	68° 50′ 38″	2923	70° 22′ 28″	2929	71° 54′ 10″	2935	73° 25′ 44″	2942
	Pollux	W.	24 36 7	2901	26 8 24	2906	27 40 35	2912	29 12 39	2918
	SATURN	E.	40 51 34	2860	39 18 24	2868	37 45 24	2875	36 12 33	2883
	Spica	E.	66 14 36	2899	64 42 16	2906	63 10 5	2914	61 38 4	2922
11	Aldebaran	W.	81 1 32	2973	82 32 19	2979	84 2 58	2985	85 33 30	2990
	Pollux	W.	36 51 7	2946	38 22 27	2952	39 53 40	2958	41 24 46	2963
	SATURN	E.	28 30 36	2917	26 58 39	2924	25 26 51	2931	23 55 11	2938
	Spica	E.	54 0 18	2958	52 29 12	2964	50 58 14	2971	49 27 25	2978
	Antares	E.	99 50 59	2944	98 19 36	2950	96 48 20	2956	95 17 12	2962
12	Aldebaran	W.	93 4 24	3018	94 34 14	3023	96 3 58	3028	97 33 36	3034
	Pollux	W.	48 58 35	2989	50 29 2	2994	51 59 22	2998	53 29 37	3003
	Spica	E.	41 55 28	3012	40 25 30	3018	38 55 40	3026	37 25 59	3032
	Antares	E.	87 43 17	2989	86 12 50	2994	84 42 30	2999	83 12 16	3004
13	Pollux	W.	60 59 26	3025	62 29 8	3029	63 58 45	3032	65 28 18	3036
	Regulus	W.	24 53 57	3095	26 22 13	3092	27 50 32	3090	29 18 54	3087
	Antares	E.	75 42 34	3026	74 12 54	3031	72 43 20	3034	71 13 50	3039
	MARS	E.	96 53 35	3251	95 28 26	3255	94 3 22	3259	92 38 23	3263
14	Pollux	W.	72 54 55	3052	74 24 3	3056	75 53 7	3058	77 22 8	3060
	Regulus	W.	36 41 3	3087	38 9 29	3087	39 37 54	3088	41 6 18	3088
	Antares	E.	63 47 30	3056	62 18 26	3059	60 49 26	3062	59 20 30	3065
	MARS	E.	85 34 32	3281	84 9 58	3283	82 45 27	3287	81 21 0	3289
15	Pollux	W.	84 46 31	3070	86 15 17	3072	87 44 1	3073	89 12 44	3074
	Regulus	W.	48 28 8	3091	49 56 28	3092	51 24 47	3092	52 53 6	3092
	SATURN	W.	19 51 45	3051	21 20 55	3050	22 50 6	3050	24 19 17	3050
	Antares	E.	51 56 35	3076	50 27 56	3078	48 59 19	3079	47 30 44	3081
	MARS	E.	74 19 28	3300	72 55 17	3301	71 31 7	3303	70 6 59	3305
16	Pollux	W.	96 36 5	3075	98 4 45	3074	99 33 26	3074	101 2 7	3073
	Regulus	W.	60 14 43	3091	61 43 4	3089	63 11 27	3088	64 39 51	3087
	SATURN	W.	31 45 13	3049	33 14 25	3047	34 43 39	3047	36 12 54	3045
	Antares	E.	40 8 11	3085	38 39 43	3086	37 11 16	3085	35 42 48	3086
	MARS	E.	63 6 35	3306	61 42 31	3306	60 18 27	3006	58 54 22	3006
	α Aquilæ	E.	90 37 14	3896	89 23 50	3896	88 10 26	3897	86 57 3	3898
17	Regulus	W.	72 2 22	3076	73 31 1	3073	74 59 44	3069	76 28 31	3066
	SATURN	W.	43 39 41	3034	45 9 11	3032	46 38 44	3029	48 8 21	3025
	Spica	W.	18 14 18	3178	19 40 53	3158	21 7 52	3143	22 35 10	3129
	MARS	E.	51 53 39	3297	50 29 24	3294	49 5 6	3292	47 40 45	3289
	α Aquilæ	E.	80 50 39	3915	79 37 34	3919	78 24 34	3925	77 11 40	3933
	SUN	E.	136 59 53	3464	135 38 49	3460	134 17 40	3455	132 56 26	3451
18	Regulus	W.	83 53 41	3043	85 23 1	3037	86 52 28	3030	88 22 3	3025
	SATURN	W.	55 37 42	3002	57 7 52	2997	58 38 9	2990	60 8 34	2985
	Spica	W.	29 55 22	3075	31 24 2	3066	32 52 53	3056	34 21 56	3047
	MARS	E.	40 38 2	3270	39 13 15	3265	37 48 22	3260	36 23 24	3255
	α Aquilæ	E.	71 9 16	3981	69 57 18	3995	68 45 33	4009	67 34 2	4025
	SUN	E.	126 8 49	3423	124 46 58	3415	123 24 59	3408	122 2 52	3400

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	Aldebaran	W.	74° 57′ 9″	2949	76° 28′ 26″	2954	77° 59′ 36″	2961	79° 30′ 38″	2967
	Pollux	W.	30 44 35	2924	32 16 24	2929	33 48 6	2935	35 19 40	2941
	SATURN	E.	34 39 52	2889	33 7 19	2897	31 34 56	2904	30 2 42	2910
	Spica	E.	60 6 13	2928	58 34 30	2936	57 2 57	2943	55 31 33	2950
11	Aldebaran	W.	87 3 55	2997	88 34 12	3001	90 4 23	3007	91 34 27	3013
	Pollux	W.	42 55 45	2969	44 26 37	2973	45 57 23	2979	47 28 2	2984
	SATURN	E.	22 23 40	2944	20 52 17	2952	19 21 4	2959	17 50 0	2967
	Spica	E.	47 56 45	2985	46 26 13	2992	44 55 50	2998	43 25 35	3005
	Antares	E.	93 46 11	2967	92 15 17	2973	90 44 30	2978	89 13 50	2984
12	Aldebaran	W.	99 3 7	3039	100 32 32	3043	102 1 51	3048	103 31 4	3053
	Pollux	W.	54 59 46	3008	56 29 49	3012	57 59 47	3017	59 29 39	3021
	Spica	E.	35 56 26	3040	34 27 3	3047	32 57 49	3056	31 28 45	3063
	Antares	E.	81 42 8	3009	80 12 6	3014	78 42 10	3018	77 12 19	3022
13	Pollux	W.	66 57 46	3039	68 27 10	3043	69 56 29	3047	71 25 44	3050
	Regulus	W.	30 47 19	3087	32 15 45	3087	33 44 11	3087	35 12 37	3087
	Antares	E.	69 44 25	3043	68 15 5	3046	66 45 49	3050	65 16 38	3052
	MARS	E.	91 13 28	3267	89 48 38	3270	88 23 52	3274	86 59 10	3277
14	Pollux	W.	78 51 6	3063	80 20 1	3065	81 48 53	3067	83 17 43	3069
	Regulus	W.	42 34 42	3089	44 3 5	3090	45 31 27	3091	46 59 48	3091
	Antares	E.	57 51 37	3067	56 22 47	3069	54 54 0	3072	53 25 16	3074
	MARS	E.	79 56 36	3292	78 32 15	3294	77 7 57	3296	75 43 41	3299
15	Pollux	W.	90 41 25	3074	92 10 6	3075	93 38 46	3076	95 7 25	3075
	Regulus	W.	54 21 25	3092	55 49 44	3092	57 18 3	3091	58 46 23	3091
	SATURN	W.	25 48 28	3050	27 17 39	3050	28 46 50	3050	30 16 1	3049
	Antares	E.	46 2 11	3082	44 33 39	3083	43 5 9	3084	41 36 40	3084
	MARS	E.	68 42 53	3306	67 18 48	3306	65 54 43	3306	64 30 39	3306
16	Pollux	W.	102 30 50	3072	103 59 34	3070	105 28 20	3069	106 57 8	3066
	Regulus	W.	66 8 16	3085	67 36 44	3083	69 5 14	3081	70 33 47	3079
	SATURN	W.	37 42 11	3043	39 11 30	3042	40 40 51	3039	42 10 15	3038
	Antares	E.	34 14 21	3086	32 45 54	3085	31 17 26	3085	29 48 58	3084
	MARS	E.	57 30 17	3304	56 6 10	3303	54 42 2	3301	53 17 52	3299
	α Aquilæ	E.	85 43 41	3900	84 30 21	3902	83 17 3	3906	82 3 49	3910
17	Regulus	W.	77 57 22	3062	79 26 18	3057	80 55 20	3053	82 24 27	3047
	SATURN	W.	49 38 3	3022	51 7 49	3017	52 37 41	3013	54 7 38	3007
	Spica	W.	24 2 45	3116	25 30 35	3105	26 58 38	3095	28 26 54	3085
	MARS	E.	46 16 21	3286	44 51 53	3282	43 27 21	3278	42 2 44	3274
	α Aquilæ	E.	75 58 54	3941	74 46 16	3949	73 33 46	3959	72 21 26	3969
	SUN	E.	131 35 7	3446	130 13 42	3440	128 52 11	3434	127 30 33	3429
18	Regulus	W.	89 51 45	3018	91 21 36	3011	92 51 35	3001	94 21 43	2996
	SATURN	W.	61 39 6	2977	63 9 47	2970	64 40 37	2962	66 11 37	2955
	Spica	W.	35 51 10	3038	37 20 36	3029	38 50 13	3019	40 20 2	3009
	MARS	E.	34 58 20	3250	33 33 10	3244	32 7 53	3238	30 42 29	3233
	α Aquilæ	E.	66 22 47	4041	65 11 48	4061	64 1 8	4080	62 50 47	4103
	SUN	E.	120 40 36	3393	119 18 11	3385	117 55 37	3376	116 32 53	3367

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
19	Regulus	W.	95° 52′ 1″	2988	97° 22′ 29″	2979	98° 53′ 8″	2969	100° 23′ 59″	2961
	SATURN	W.	67 42 46	2946	69 14 6	2939	70 45 36	2920	72 17 18	2990
	Spica	W.	41 50 3	2999	43 20 17	2989	44 50 43	2979	46 21 22	2969
	MARS	E.	29 16 59	3227	27 51 22	3222	26 25 39	3216	24 59 49	3212
	α Aquilæ	E.	61 40 48	4127	60 31 12	4155	59 22 3	4184	58 13 22	4216
	Fomalhaut	E.	87 44 52	3148	86 17 40	3140	84 50 19	3132	83 22 48	3123
	SUN	E.	115 9 59	3358	113 46 54	3348	112 23 38	3338	111 0 10	3326
20	SATURN	W.	79 58 58	2866	81 32 0	2855	83 5 17	2842	84 38 50	2830
	Spica	W.	53 58 5	2910	55 30 11	2898	57 2 32	2885	58 35 10	2873
	α Aquilæ	E.	52 38 29	4431	51 33 36	4489	50 29 34	4550	49 26 26	4621
	Fomalhaut	E.	76 2 35	3079	74 34 0	3069	73 5 13	3061	71 36 16	3052
	SUN	E.	103 59 35	3267	102 34 45	3254	101 9 40	3241	99 44 19	3227
21	Spica	W.	66 22 41	2801	67 57 8	2786	69 31 54	2770	71 7 1	2755
	Antares	W.	20 31 1	2827	22 4 54	2805	23 39 15	2785	25 14 2	2767
	Fomalhaut	E.	64 8 41	3007	62 38 37	2998	61 8 22	2990	59 37 57	2982
	SUN	E.	92 33 18	3152	91 6 11	3135	89 38 44	3119	88 10 57	3101
22	Spica	W.	79 7 54	2672	80 45 12	2655	82 22 53	2637	84 0 58	2618
	Antares	W.	33 14 0	2675	34 51 13	2657	36 28 51	2638	38 6 54	2619
	Fomalhaut	E.	52 3 40	2953	50 32 28	2950	49 1 12	2947	47 29 53	2948
	SUN	E.	80 46 43	3013	79 16 46	2993	77 46 25	2975	76 15 41	2955
23	Spica	W.	92 17 34	2527	93 58 9	2509	95 39 10	2490	97 20 37	2471
	Antares	W.	46 23 36	2525	48 4 15	2506	49 45 20	2487	51 26 52	2467
	MARS	W.	19 30 24	2779	21 5 20	2750	22 40 53	2723	24 17 2	2698
	SUN	E.	68 35 50	2857	67 2 36	2838	65 28 57	2817	63 54 51	2797
24	Antares	W.	60 1 21	2372	61 45 36	2353	63 30 19	2334	65 15 29	2315
	MARS	W.	32 26 5	2580	34 5 28	2559	35 45 20	2537	37 25 42	2516
	SUN	E.	55 57 47	2697	54 21 3	2678	52 43 53	2658	51 6 16	2639
25	Antares	W.	74 7 58	2227	75 55 46	2210	77 43 59	2193	79 32 37	2177
	MARS	W.	45 54 40	2417	47 37 50	2399	49 21 26	2381	51 5 28	2363
	SUN	E.	42 51 49	2547	41 11 41	2530	39 31 9	2514	37 50 15	2497
26	MARS	W.	59 51 44	2284	61 38 7	2270	63 24 51	2256	65 11 55	2244
	α Aquilæ	W.	49 19 48	3782	50 35 9	3680	51 52 17	3587	53 11 6	3502
	SUN	E.	29 20 28	2429	27 37 35	2419	25 54 28	2410	24 11 8	2404
29	SUN	W.	13 38 41	2379	15 22 46	2364	17 7 12	2354	18 51 52	2347
	Aldebaran	E.	45 32 31	2048	43 40 11	2058	41 48 7	2069	39 56 20	2083
	Pollux	E.	89 14 41	1979	87 20 33	1983	85 26 32	1988	83 32 39	1994
30	SUN	W.	27 36 8	2358	29 20 43	2366	31 5 6	2375	32 49 16	2365
	Pollux	E.	74 6 3	2036	72 13 25	2046	70 21 3	2057	68 28 58	2068
	Regulus	E.	110 29 32	2049	108 37 14	2059	106 45 12	2070	104 53 26	2081
31	SUN	W.	41 26 9	2447	43 8 37	2462	44 50 44	2477	46 32 30	2492
	Pollux	E.	59 13 14	2134	57 23 7	2149	55 33 22	2164	53 44 0	2180
	Regulus	E.	95 39 11	2145	93 49 21	2159	91 59 52	2174	90 10 46	2190

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	$\mathrm{XVIII}^{\mathrm{h}}$.	P. L. of Diff.	$\mathrm{XXI}^{\mathrm{h}}$.	P. L. of Diff.
19	Regulus	W.	101° 55′ 1″	2950	103° 26′ 16″	2941	104° 57′ 43″	2931	106° 29′ 23″	2919
	SATURN	W.	73 49 12	2909	75 21 19	2900	76 53 38	2889	78 26 11	2878
	Spica	W.	47 52 14	2958	49 23 20	2946	50 54 40	2935	52 26 15	2923
	MARS	E.	23 33 54	3207	22 7 53	3204	20 41 49	3202	19 15 42	3201
	α Aquilæ	E.	57 5 11	4251	55 57 33	4290	54 50 31	4333	53 44 9	4379
	Fomalhaut	E.	81 55 6	3114	80 27 14	3106	78 59 12	3097	77 30 59	3088
	SUN	E.	109 36 29	3316	108 12 36	3305	106 48 30	3293	105 24 10	3280
20	SATURN	W.	86 12 39	2817	87 46 45	2804	89 21 8	2790	90 55 49	2776
	Spica	W.	60 8 4	2859	61 41 16	2845	63 14 46	2831	64 48 34	2816
	α Aquilæ	E.	48 24 19	4697	47 23 17	4782	46 23 26	4876	45 24 52	4983
	Fomalhaut	E.	70 7 7	3043	68 37 47	3034	67 8 16	3025	65 38 31	3016
	SUN	E.	98 18 42	3213	96 52 48	3198	95 26 36	3183	94 0 6	3168
21	Spica	W.	72 42 28	2738	74 18 17	2722	75 54 27	2706	77 30 59	2689
	Antares	W.	26 49 13	2749	28 24 48	2730	30 0 48	2712	31 37 12	2694
	Fomalhaut	E.	58 7 22	2975	56 36 38	2969	55 5 46	2962	53 34 46	2958
	SUN	E.	86 42 49	3084	85 14 20	3067	83 45 30	3049	82 16 18	3030
22	Spica	W.	85 39 28	2601	87 18 22	2583	88 57 41	2564	90 37 25	2546
	Antares	W.	39 45 23	2601	41 24 17	2582	43 3 37	2563	44 43 23	2543
	Fomalhaut	E.	45 58 35	2950	44 27 19	2954	42 56 8	2960	41 25 5	2968
	SUN	E.	74 44 32	2936	73 12 59	2916	71 41 1	2897	70 8 38	2877
23	Spica	W.	99 2 31	2453	100 44 51	2434	102 27 37	2415	104 10 50	2397
	Antares	W.	53 8·52	2448	54 51 18	2429	56 34 12	2410	58 17 33	2391
	MARS	W.	25 53 45	2672	27 31 2	2649	29 8 51	2625	30 47 12	2601
	SUN	E.	62 20 19	2777	60 45 20	2757	59 9 56	2737	57 34 5	2716
24	Antares	W.	67 1 6	2297	68 47 10	2279	70 33 40	2262	72 20 36	2244
	MARS	W.	39 6 33	2495	40 47 53	2475	42 29 41	2455	44 11 57	2436
	SUN	E.	49 28 14	2620	47 49 46	2601	46 10 52	2583	44 31 33	2564
25	Antares	W.	81 21 39	2161	83 11 5	2146	85 0 54	2131	86 51 6	2116
	MARS	W.	52 49 56	2346	54 34 48	2330	56 20 4	2314	58 5 43	2299
	SUN	E.	36 8 58	2482	34 27 20	2468	32 45 22	2454	31 3 4	2441
26	MARS	W.	66 59 17	2232	68 46 57	2220	70 34 55	2209	72 23 9	2199
	α Aquilæ	W.	54 31 28	3424	55 53 17	3352	57 16 28	3288	58 40 54	3227
	SUN	E.	22 27 39	2399	20 44 3	2397	19 0 24	2398	17 16 46	2401
29	SUN	W.	20 36 44	2345	22 21 38	2344	24 6 33	2347	25 51 24	2352
	Aldebaran	E.	38 4 54	2098	36 13 51	2114	34 23 13	2133	32 33 4	2155
	Pollux	E.	81 38 56	2001	79 45 24	2009	77 52 3	2017	75 58 56	2026
30	SUN	W.	34 33 12	2396	36 16 52	2408	38 0 16	2420	39 43 22	2433
	Pollux	E.	66 37 10	2081	64 45 41	2094	62 54 32	2107	61 3 43	2120
	Regulus	E.	103 1 57	2093	101 10 47	2105	99 19 55	2118	97 29 23	2131
31	SUN	W.	48 13 54	2509	49 54 55	2525	51 35 34	2542	53 15 49	2559
	Pollux	E.	51 55 2	2195	50 6 27	2212	48 18 17	2228	46 30 31	2245
	Regulus	E.	88 22 3	2206	86 33 44	2221	84 45 48	2237	82 58 16	2254

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff for 1 Hour.	THE SUN'S Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to / Subtracted from Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Frid.	1	0 44 59.02	9.105	N. 4 50 11.9	+57.72	16 1.96	64.52	3 45.06	0.749
Sat.	2	0 48 37.60	9.110	5 13 14.4	57.49	16 1.69	64.54	3 27.15	0.744
SUN.	3	0 52 16.31	9.116	5 36 11.2	57.25	16 1.43	64.56	3 9.36	0.738
Mon.	4	0 55 55.17	9.122	5 59 2.1	+56.99	16 1.16	64.59	2 51.71	0.732
Tues.	5	0 59 34.19	9.129	6 21 46.7	56.72	16 0.89	64.62	2 34.22	0.725
Wed.	6	1 3 13.39	9.137	6 44 24.5	56.43	16 0.62	64.65	2 16.91	0.717
Thur.	7	1 6 52.79	9.146	7 6 55.3	+56.13	16 0.35	64.68	1 59.80	0.708
Frid.	8	1 10 32.40	9.155	7 29 18.7	55.82	16 0.08	64.72	1 42.91	0.699
Sat.	9	1 14 12.26	9.166	7 51 34.5	55.50	15 59.81	64.76	1 26.26	0.688
SUN.	10	1 17 52.38	9.177	8 13 42.3	+55.16	15 59.54	64.80	1 9.87	0.677
Mon.	11	1 21 32.78	9.189	8 35 41.8	54.81	15 59.27	64.84	0 53.76	0.665
Tues.	12	1 25 13.47	9.202	8 57 32.7	54.44	15 59.00	64.89	0 37.95	0.652
Wed.	13	1 28 54.48	9.216	9 19 14.7	+54.05	15 58.73	64.94	0 22.44	0.636
Thur.	14	1 32 35.83	9.230	9 40 47.4	53.66	15 58.46	64.99	0 7.28	0.624
Frid.	15	1 36 17.54	9.245	10 2 10.6	53.26	15 58.19	65.04	0 7.53	0.609
Sat.	16	1 39 59.62	9.261	10 23 24.0	+52.84	15 57.92	65.10	0 21.96	0.593
SUN.	17	1 43 42.10	9.279	10 44 27.2	52.41	15 57.65	65.15	0 36.00	0.576
Mon.	18	1 47 24.99	9.296	11 5 19.9	51.97	15 57.38	65.21	0 49.63	0.559
Tues.	19	1 51 8.30	9.314	11 26 1.9	+51.51	15 57.11	65.27	1 2.83	0.541
Wed.	20	1 54 52.06	9.333	11 46 32.7	51.04	15 56.85	65.33	1 15.60	0.522
Thur.	21	1 58 36.27	9.352	12 6 52.0	50.56	15 56.58	65.39	1 27.91	0.503
Frid.	22	2 2 20.94	9.372	12 26 59.5	+50.06	15 56.32	65.46	1 39.76	0.483
Sat.	23	2 6 6.08	9.392	12 46 54.9	49.54	15 56.06	65.53	1 51.15	0.463
SUN.	24	2 9 51.70	9.412	13 6 37.9	49.01	15 55.80	65.60	2 2.05	0.443
Mon.	25	2 13 37.82	9.432	13 26 8.0	+48.47	15 55.55	65.67	2 12.46	0.423
Tues.	26	2 17 24.44	9.453	13 45 24.9	47.91	15 55.30	65.74	2 22.37	0.402
Wed.	27	2 21 11.56	9.474	14 4 28.3	47.35	15 55.06	65.81	2 31.78	0.381
Thur.	28	2 24 59.18	9.495	14 23 17.7	+46.76	15 54.82	65.89	2 40.68	0.360
Frid.	29	2 28 47.32	9.517	14 41 52.9	46.16	15 54.58	65.96	2 49.07	0.338
Sat.	30	2 32 35.99	9.539	15 0 13.5	45.55	15 54.34	66.04	2 56.94	0.316
SUN.	31	2 36 25.18	9.561	N. 15 18 19.2	+44.92	15 54.10	66.12	3 4 28	0.294

NOTE.—The mean time of semidiameter passing may be found by subtracting 0s.18 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	Equation of Time, to be Subtracted from / Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Frid.	1	0 44 58.45	9.107	N. 4 50 8.3	+57.73	3 45.11	0.749	0 41 13.34
Sat.	2	0 48 37.08	9.112	5 13 11.1	57.50	3 27.19	0.744	0 45 9.89
SUN.	3	0 52 15.84	9.118	5 36 8.2	57.26	3 9.40	0.738	0 49 6.44
Mon.	4	0 55 54.74	9.124	5 58 59.4	+57.00	2 51.75	0.732	0 53 2.99
Tues.	5	0 59 33.80	9.131	6 21 44.2	56.73	2 34.26	0.725	0 56 59.55
Wed.	6	1 3 13.05	9.139	6 44 22 3	56.44	2 16.95	0.717	1 0 56.10
Thur.	7	1 6 52.49	9.148	7 6 53.4	+56.14	1 59.83	0.708	1 4 52.66
Frid.	8	1 10 32.14	9.157	7 29 17.1	55.83	1 42.93	0.699	1 8 49.21
Sat.	9	1 14 12.04	9.168	7 51 33.2	55.51	1 26.27	0.688	1 12 45.77
SUN	10	1 17 52.20	9.179	8 13 41.2	+55.17	1 9.88	0.677	1 16 42.32
Mon.	11	1 21 32.64	9.191	8 35 40.9	54.82	0 53.77	0.665	1 20 38.87
Tues.	12	1 25 13.37	9.204	8 57 32.1	54.45	0 37.95	0.652	1 24 35.42
Wed.	13	1 28 54.42	9.218	9 19 14.3	+54.06	0 22.44	0.638	1. 28 31.98
Thur.	14	1 32 35.81	9.232	9 40 47.3	53.67	0 7.28	0.624	1 32 28.53
Frid.	15	1 36 17.56	9.247	10 2 10.7	53.27	0 7.53	0.609	1 36 25.09
Sat.	16	1 39 59.68	9.263	10 23 24.3	+52.85	0 21.96	0.593	1 40 21.64
SUN.	17	1 43 42.20	9.280	10 44 27.7	52.42	0 36.00	0.576	1 44 18.20
Mon.	18	1 47 25.12	9.297	11 5 20.6	51.98	0 49.63	0.559	1 48 14.75
Tues.	19	1 51 8.47	9.315	11 26 2.7	+51.52	1 2.84	0.541	1 52 11.31
Wed.	20	1 54 52.26	9.334	11 46 33.7	51.05	1 15.61	0.522	1 56 7.86
Thur.	21	1 58 36.50	9.353	12 6 53.2	50.57	1 27.92	0.503	2 0 4.42
Frid.	22	2 2 21.20	9.373	12 27 0.9	+50.07	1 39.77	0.483	2 4 0.97
Sat.	23	2 6 6.37	9.393	12 46 56.5	49.55	1 51.16	0.463	2 7 57.53
SUN.	24	2 9 52.02	9.413	13 6 39.5	49.02	2 2.06	0.443	2 11 54.08
Mon.	25	2 13 38.17	9.433	13 26 9.7	+48.48	2 12.47	0.423	2 15 50.64
Tues.	26	2 17 24.81	9.454	13 45 26.7	47.92	2 22.39	0.402	2 19 47.19
Wed.	27	2 21 11.95	9.475	14 4 30.1	47.35	2 31.80	0.381	2 23 43.75
Thur.	28	2 24 59.60	9.496	14 23 19.7	+46.76	2 40.70	0.360	2 27 40.30
Frid.	29	2 28 47.77	9.518	14 41 55.0	46.16	2 49.09	0.338	2 31 36.86
Sat.	30	2 32 36.46	9.540	15 0 15.7	45.55	2 56.96	0.316	2 35 33.41
SUN.	31	2 36 25.67	9.562	N. 15 18 21.5	+44.92	3 4.30	0.294	2 39 29.97

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

Diff. for 1 Hour,
$+9^s.8565$.
(Table III.)

AT GREENWICH MEAN NOON.

THE SUN'S

Day of the Month.	Day of the Year.	TRUE LONGITUDE. λ	TRUE LONGITUDE. λ′	Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	92	12 13 57.6	13 58.4	147.85	+ 0.18	0.0000139	+51.3	23 14 57.51
2	93	13 13 5.0	13 5.6	147.75	0.32	0.0001368	51.1	23 11 1.60
3	94	14 12 10.1	12 10.6	147.66	0.44	0.0002593	51.0	23 7 5.69
4	95	15 11 13.0	11 13.4	147.57	+ 0.53	0.0003815	+50.9	23 3 9.78
5	96	16 10 13.6	10 13.9	147.48	0.60	0.0005035	50.9	22 59 13.88
6	97	17 9 11.8	9 12.0	147.38	0.65	0.0006254	50.8	22 55 17.97
7	98	18 8 7.7	8 7.8	147.29	+ 0.67	0.0007472	+50.8	22 51 22.06
8	99	19 7 1.3	7 1.3	147.19	0.66	0.0008691	50.8	22 47 26.15
9	100	20 5 52.7	5 52.6	147.10	0.61	0.0009911	50.8	22 43 30.25
10	101	21 4 41.9	4 41.7	147.01	+ 0.53	0.0011132	+50.9	22 39 34.34
11	102	22 3 29.0	3 28.7	146.92	0.43	0.0012355	50.9	22 35 38.43
12	103	23 2 14.2	2 13.8	146.84	0.32	0.0013580	51.0	22 31 42.52
13	104	24 0 57.4	0 56.9	146.76	+ 0.20	0.0014807	+51.0	22 27 46.62
14	105	24 59 38.7	59 38.1	146.68	+ 0.07	0.0016035	51.1	22 23 50.71
15	106	25 58 18.2	58 17.4	146.60	− 0.06	0.0017262	51.1	22 19 54.80
16	107	26 56 55.8	56 54.9	146.53	− 0.18	0.0018488	+51.0	22 15 58.89
17	108	27 55 31.7	55 30.7	146.46	0.28	0.0019711	50.9	22 12 2.98
18	109	28 54 6.0	54 4.9	146.40	0.37	0.0020930	50.7	22 8 7.07
19	110	29 52 38.7	52 37.4	146.33	− 0.43	0.0022144	+50.4	22 4 11.16
20	111	30 51 9.7	51 8.3	146.26	0.46	0.0023351	50.1	22 0 15.26
21	112	31 49 39.1	49 37.6	146.19	0.45	0.0024549	49.7	21 56 19.35
22	113	32 48 6.9	48 5.3	146.13	− 0.42	0.0025738	+49.3	21 52 23.44
23	114	33 46 33.1	46 31.4	146.06	0.36	0.0026915	48.8	21 48 27.53
24	115	34 44 57.6	44 55.7	145.98	0.27	0.0028079	48.2	21 44 31.62
25	116	35 43 20.3	43 18.3	145.91	− 0.16	0.0029229	+47.6	21 40 35.71
26	117	36 41 41.3	41 39.2	145.84	− 0.04	0.0030364	47.0	21 36 39.80
27	118	37 40 0.6	39 58.4	145.77	+ 0.09	0.0031483	46.4	21 32 43.89
28	119	38 38 18.0	38 15.7	145.69	+ 0.23	0.0032586	+45.7	21 28 47.98
29	120	39 36 33.5	36 31.0	145.61	0.37	0.0033674	45.1	21 24 52.07
30	121	40 34 47.1	34 44.4	145.53	0.49	0.0034746	44.4	21 20 56.17
31	122	41 32 58.8	32 56.0	145.45	+ 0.58	0.0035803	+43.8	21 17 0.26

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′, to the mean equinox of January $1^d.0$.

Diff. for 1 Hour,
— $9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 15.2	16 8.0	59 32.4	−2.16	59 5.8	−2.26	3 47.7	2.44	3.9
2	16 0.5	15 53.0	58 36.4	2.29	58 10.9	2.28	4 47.0	2.46	4.9
3	15 45.6	15 38.4	57 43.7	2.24	57 17.4	2.15	5 45.9	2.41	5.9
4	15 31.6	15 25.1	56 52.2	−2.05	56 28.4	−1.92	6 42.8	2.30	6.9
5	15 19.1	15 13.5	56 6.3	1.78	55 45.9	1.63	7 36.2	2.14	7.9
6	15 8.4	15 3.9	55 27.3	1.47	55 10.7	1.31	8 25.5	1.98	8.9
7	14 59.9	14 56.3	54 55.9	−1.16	54 42.9	−1.01	9 11.3	1.84	9.9
8	14 53.3	14 50.7	54 31.7	0.86	54 22.3	0.72	9 54.0	1.74	10.9
9	14 48.6	14 46.9	54 14.4	0.59	54 8.2	0.46	10 34.6	1.67	11.9
10	14 45.6	14 44.7	54 3.4	−0.34	54 0.1	−0.23	11 14.0	1.64	12.9
11	14 44.2	14 44.0	53 58.1	−0.11	53 57.5	0.00	11 53.4	1.66	13.9
12	14 44.2	14 44.7	53 58.1	+0.11	54 0.1	+0.22	12 33.5	1.71	14.9
13	14 45.6	14 46.8	54 3.4	+0.33	54 8.0	+0.45	13 15.4	1.80	15.9
14	14 48.5	14 50.5	54 14.0	0.56	54 21.4	0.68	13 59.8	1.91	16.9
15	14 52.9	14 55.8	54 30.3	0.81	54 40.8	0.95	14 47.2	2.04	17.9
16	14 59.1	15 2.8	54 52.9	+1.09	55 6.7	+1.23	15 37.8	2.16	18.9
17	15 7.1	15 11.8	55 22.3	1.37	55 39.5	1.51	16 31.1	2.26	19.9
18	15 16.9	15 22.6	55 58.5	1.66	56 19.2	1.80	17 26.2	2.30	20.9
19	15 28.6	15 35.1	56 41.5	+1.92	57 5.3	+2.04	18 21.6	2.29	21.9
20	15 41.9	15 49.0	57 30.3	2.13	57 56.3	2.20	19 16.4	2.25	22.9
21	15 56.2	16 3.5	58 22.9	2.22	58 49.6	2.21	20 9.5	2.19	23.9
22	16 10.7	16 17.6	59 15.9	+2.16	59 41.3	+2.06	21 1.3	2.14	24.9
23	16 24.0	16 29.9	60 5.0	1.89	60 26.5	1.67	21 52.4	2.13	25.9
24	16 34.9	16 39.0	60 45.0	1.40	60 59.9	1.07	22 43.7	2.17	26.9
25	16 41.9	16 43.6	61 10.6	+0.71	61 16.8	+0.31	23 36.5	2.25	27.9
26	16 44.0	16 42.9	61 18.1	−0.10	61 14.4	−0.51	6		28.9
27	16 40.6	16 37.0	61 5.8	0.90	60 52.6	1.27	0 31.9	2.34	0.6
28	16 32.3	16 26.6	60 35.3	−1.60	60 14.3	−1.88	1 30.2	2.48	1.6
29	16 20.1	16 12.9	59 50.4	2.09	59 24.2	2.25	2 30.9	2.55	2.6
30	16 5.4	15 57.6	58 56.4	2.35	58 27.8	2.40	3 32.5	2.54	3.6
31	15 49.7	15 42.0	57 59.0	−2.39	57 30.5	−2.34	4 32.6	2.43	4.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 1.			
	h m s	s	° ′ ″	″
0	4 19 58.86	2.5108	N.23 15 9.1	9.007
1	4 22 29.58	2.5132	23 24 4.7	8.846
2	4 25 0.44	2.5155	23 32 50.6	8.684
3	4 27 31.44	2.5177	23 41 26.8	8.521
4	4 30 2.57	2.5199	23 49 53.1	8.356
5	4 32 33.83	2.5220	23 58 9.5	8.192
6	4 35 5.21	2.5240	24 6 16.1	8.027
7	4 37 36.71	2.5259	24 14 12.7	7.860
8	4 40 8.32	2.5277	24 21 59.3	7.693
9	4 42 40.03	2.5294	24 29 35.9	7.526
10	4 45 11.85	2.5311	24 37 2.4	7.358
11	4 47 43.76	2.5327	24 44 18.8	7.189
12	4 50 15.77	2.5342	24 51 25.1	7.020
13	4 52 47.86	2.5355	24 58 21.2	6.850
14	4 55 20.03	2.5367	25 5 7.1	6.679
15	4 57 52.27	2.5378	25 11 42.7	6.508
16	5 0 24.57	2.5389	25 18 8.1	6.337
17	5 2 56.94	2.5399	25 24 23.2	6.166
18	5 5 29.36	2.5407	25 30 28.0	5.994
19	5 8 1.83	2.5415	25 36 22.4	5.821
20	5 10 34.34	2.5421	25 42 6.5	5.649
21	5 13 6.88	2.5426	25 47 40.3	5.476
22	5 15 39.45	2.5430	25 53 3.7	5.302
23	5 18 12.04	2.5433	N.25 58 16.6	5.128
	SATURDAY 2.			
0	5 20 44.65	2.5435	N.26 3 19.1	4.955
1	5 23 17.26	2.5436	26 8 11.2	4.781
2	5 25 49.88	2.5436	26 12 52.9	4.607
3	5 28 22.49	2.5434	26 17 24.1	4.433
4	5 30 55.09	2.5432	26 21 44.9	4.260
5	5 33 27.67	2.5428	26 25 55.3	4.086
6	5 36 0.22	2.5423	26 29 55.2	3.911
7	5 38 32.74	2.5417	26 33 44.6	3.737
8	5 41 5.22	2.5408	26 37 23.6	3.563
9	5 43 37.64	2.5399	26 40 52.2	3.389
10	5 46 10.01	2.5390	26 44 10.3	3.215
11	5 48 42.32	2.5378	26 47 18.0	3.042
12	5 51 14.55	2.5366	26 50 15.3	2.868
13	5 53 46.71	2.5353	26 53 2.2	2.695
14	5 56 18.79	2.5339	26 55 38.7	2.522
15	5 58 50.78	2.5323	26 58 4.8	2.349
16	6 1 22.67	2.5306	27 0 20.5	2.176
17	6 3 54.45	2.5287	27 2 25.9	2.004
18	6 6 26.12	2.5268	27 4 21.0	1.832
19	6 8 57.67	2.5247	27 6 5.8	1.661
20	6 11 29.09	2.5226	27 7 40.3	1.489
21	6 14 0.38	2.5204	27 9 4.5	1.318
22	6 16 31.54	2.5180	27 10 18.5	1.148
23	6 19 2.54	2.5154	27 11 22.3	0.978
24	6 21 33.38	2.5127	N.27 12 15.9	0.809

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 3.			
	h m s	s	° ′ ″	″
0	6 21 33.38	2.5127	N.27 12 15.9	0.809
1	6 24 4.06	2.5100	27 12 59.4	0.641
2	6 26 34.58	2.5072	27 13 32.8	0.472
3	6 29 4.92	2.5042	27 13 56.1	0.304
4	6 31 35.08	2.5011	27 14 9.3	+ 0.138
5	6 34 5.05	2.4978	27 14 12.6	− 0.028
6	6 36 34.82	2.4945	27 14 5.9	0.194
7	6 39 4.39	2.4912	27 13 49.3	0.359
8	6 41 33.76	2.4877	27 13 22.8	0.524
9	6 44 2.91	2.4840	27 12 46.4	0.688
10	6 46 31.84	2.4802	27 12 0.2	0.851
11	6 49 0.54	2.4764	27 11 4.3	1.013
12	6 51 29.01	2.4725	27 9 58.7	1.174
13	6 53 57.24	2.4685	27 8 43.4	1.335
14	6 56 25.23	2.4643	27 7 18.5	1.495
15	6 58 52.96	2.4601	27 5 44.0	1.654
16	7 1 20.44	2.4558	27 4 0.0	1.812
17	7 3 47.66	2.4513	27 2 6.5	1.969
18	7 6 14.60	2.4468	27 0 3.7	2.125
19	7 8 41.27	2.4423	26 57 51.5	2.281
20	7 11 7.67	2.4377	26 55 30.0	2.436
21	7 13 33.79	2.4329	26 52 59.2	2.589
22	7 15 59.62	2.4280	26 50 19.3	2.742
23	7 18 25.15	2.4231	N.26 47 30.2	2.894
	MONDAY 4.			
0	7 20 50.39	2.4181	N.26 44 32.0	3.045
1	7 23 15.32	2.4130	26 41 24.8	3.194
2	7 25 39.95	2.4079	26 38 8.7	3.342
3	7 28 4.27	2.4027	26 34 43.7	3.490
4	7 30 28.28	2.3974	26 31 9.9	3.637
5	7 32 51.96	2.3920	26 27 27.3	3.782
6	7 35 15.32	2.3866	26 23 36.0	3.927
7	7 37 38.36	2.3812	26 19 36.1	4.070
8	7 40 1.06	2.3756	26 15 27.6	4.212
9	7 42 23.43	2.3700	26 11 10.6	4.354
10	7 44 45.46	2.3643	26 6 45.1	4.494
11	7 47 7.15	2.3586	26 2 11.3	4.633
12	7 49 28.49	2.3528	25 57 29.2	4.771
13	7 51 49.48	2.3470	25 52 38.8	4.908
14	7 54 10.13	2.3412	25 47 40.2	5.043
15	7 56 30.43	2.3353	25 42 33.6	5.178
16	7 58 50.37	2.3293	25 37 18.9	5.312
17	8 1 9.95	2.3234	25 31 56.2	5.443
18	8 3 29.18	2.3174	25 26 25.7	5.574
19	8 5 48.04	2.3113	25 20 47.3	5.705
20	8 8 6.54	2.3052	25 15 1.1	5.833
21	8 10 24.67	2.2991	25 9 7.3	5.960
22	8 12 42.43	2.2930	25 3 5.9	6.087
23	8 14 59.83	2.2869	24 56 56.9	6.213
24	8 17 16.86	2.2807	N.24 50 40.4	6.337

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 5.					THURSDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	8 17 16.86	2.2807	N.24 50 40.4	6.337	0	9 59 37.34	1.9913	N.17 46 1.7	10.918
1	8 19 33.51	2.2744	24 44 16.5	6.459	1	10 1 36.66	1.9861	17 35 4.6	10.986
2	8 21 49.79	2.2682	24 37 45.3	6.581	2	10 3 35.67	1.9809	17 24 3.4	11.052
3	8 24 5.70	2.2620	24 31 6.8	6.702	3	10 5 34.37	1.9758	17 12 58.3	11.118
4	8 26 21.23	2.2557	24 24 21.1	6.821	4	10 7 32.76	1.9707	17 1 49.2	11.184
5	8 28 36.38	2.2494	24 17 28.3	6.938	5	10 9 30.85	1.9656	16 50 36.2	11.249
6	8 30 51.16	2.2431	24 10 28.5	7.055	6	10 11 28.63	1.9605	16 39 19.3	11.312
7	8 33 5.56	2.2368	24 3 21.7	7.172	7	10 13 26.11	1.9556	16 27 58.7	11.374
8	8 35 19.58	2.2305	23 56 7.9	7.287	8	10 15 23.30	1.9507	16 16 34.4	11.436
9	8 37 33.22	2.2242	23 48 47.3	7.399	9	10 17 20.19	1.9458	16 5 6.4	11.497
10	8 39 46.48	2.2179	23 41 20.0	7.511	10	10 19 16.79	1.9410	15 53 34.8	11.555
11	8 41 59.36	2.2116	23 33 46.0	7.622	11	10 21 13.11	1.9363	15 41 59.8	11.613
12	8 44 11.87	2.2053	23 26 5.3	7.732	12	10 23 9.15	1.9317	15 30 21.3	11.670
13	8 46 23.99	2.1989	23 18 18.1	7.841	13	10 25 4.91	1.9270	15 18 39.4	11.727
14	8 48 35.74	2.1926	23 10 24.4	7.947	14	10 27 0.39	1.9224	15 6 54.1	11.782
15	8 50 47.11	2.1863	23 2 24.4	8.053	15	10 28 55.60	1.9179	14 55 5.5	11.837
16	8 52 58.10	2.1800	22 54 18.0	8.159	16	10 30 50.54	1.9134	14 43 13.7	11.891
17	8 55 8.71	2.1737	22 46 5.3	8.263	17	10 32 45.21	1.9090	14 31 18.6	11.944
18	8 57 18.95	2.1675	22 37 46.4	8.366	18	10 34 39.62	1.9047	14 19 20.4	11.995
19	8 59 28.81	2.1612	22 29 21.4	8.467	19	10 36 33.77	1.9004	14 7 19.2	12.046
20	9 1 38.29	2.1549	22 20 50.4	8.567	20	10 38 27.67	1.8961	13 55 14.9	12.097
21	9 3 47.40	2.1487	22 12 13.4	8.667	21	10 40 21.31	1.8919	13 43 7.6	12.146
22	9 5 56.13	2.1424	22 3 30.4	8.765	22	10 42 14.70	1.8878	13 30 57.4	12.193
23	9 8 4.49	2.1362	N.21 54 41.6	8.861	23	10 44 7.85	1.8838	N.13 18 44.4	12.240
	WEDNESDAY 6.					FRIDAY 8.			
0	9 10 12.48	2.1301	N.21 45 47.1	8.956	0	10 46 0.76	1.8798	N.13 6 28.6	12.286
1	9 12 20.10	2.1239	21 36 46.9	9.051	1	10 47 53.43	1.8759	12 54 10.1	12.332
2	9 14 27.35	2.1178	21 27 41.0	9.145	2	10 49 45.87	1.8721	12 41 48.8	12.377
3	9 16 34.24	2.1117	21 18 29.5	9.237	3	10 51 38.08	1.8683	12 29 24.9	12.420
4	9 18 40.76	2.1056	21 9 12.5	9.328	4	10 53 30.06	1.8645	12 16 58.4	12.463
5	9 20 46.91	2.0995	20 59 50.1	9.418	5	10 55 21.82	1.8608	12 4 29.4	12.505
6	9 22 52.70	2.0935	20 50 22.4	9.507	6	10 57 13.36	1.8572	11 51 57.8	12.547
7	9 24 58.13	2.0875	20 40 49.3	9.595	7	10 59 4.68	1.8536	11 39 23.8	12.586
8	9 27 3.20	2.0816	20 31 11.0	9.681	8	11 0 55.79	1.8501	11 26 47.5	12.625
9	9 29 7.92	2.0757	20 21 27.6	9.766	9	11 2 46.70	1.8467	11 14 8.8	12.664
10	9 31 12.28	2.0697	20 11 39.1	9.851	10	11 4 37.40	1.8433	11 1 27.8	12.702
11	9 33 16.29	2.0638	20 1 45.5	9.934	11	11 6 27.90	1.8400	10 48 44.6	12.738
12	9 35 19.94	2.0580	19 51 47.0	10.016	12	11 8 18.20	1.8367	10 35 59.2	12.774
13	9 37 23.25	2.0522	19 41 43.6	10.097	13	11 10 8.30	1.8335	10 23 11.7	12.809
14	9 39 26.21	2.0465	19 31 35.3	10.177	14	11 11 58.22	1.8305	10 10 22.1	12.844
15	9 41 28.83	2.0408	19 21 22.3	10.256	15	11 13 47.96	1.8275	9 57 30.4	12.877
16	9 43 31.10	2.0351	19 11 4.6	10.333	16	11 15 37.52	1.8245	9 44 36.8	12.909
17	9 45 33.04	2.0295	19 0 42.3	10.410	17	11 17 26.90	1.8215	9 31 41.3	12.941
18	9 47 34.64	2.0238	18 50 15.4	10.486	18	11 19 16.10	1.8186	9 18 43.8	12.973
19	9 49 35.90	2.0183	18 39 44.0	10.560	19	11 21 5.13	1.8158	9 5 44.5	13.003
20	9 51 36.84	2.0129	18 29 8.2	10.633	20	11 22 54.00	1.8131	8 52 43.5	13.032
21	9 53 37.45	2.0075	18 18 28.0	10.706	21	11 24 42.70	1.8104	8 39 40.7	13.061
22	9 55 37.74	2.0021	18 7 43.5	10.777	22	11 26 31.24	1.8077	8 26 36.2	13.089
23	9 57 37.70	1.9967	17 56 54.7	10.848	23	11 28 19.63	1.8052	8 13 30.1	13.116
24	9 59 37.34	1.9913	N.17 46 1.7	10.918	24	11 30 7.87	1.8027	N. 8 0 22.3	13.142

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 30 7.87	1.8027	N. 8 0 22.3	13.149
1	11 31 55.96	1.8003	7 47 13.0	13.167
2	11 33 43.91	1.7980	7 34 2.2	13.192
3	11 35 31.72	1.7957	7 20 50.0	13.215
4	11 37 19.39	1.7934	7 7 36.4	13.238
5	11 39 6.93	1.7912	6 54 21.4	13.261
6	11 40 54.34	1.7891	6 41 5.1	13.282
7	11 42 41.62	1.7871	6 27 47.5	13.303
8	11 44 28.79	1.7852	6 14 28.7	13.323
9	11 46 15.84	1.7833	6 1 8.8	13.342
10	11 48 2.78	1.7814	5 47 47.7	13.361
11	11 49 49.61	1.7796	5 34 25.5	13.378
12	11 51 36.33	1.7778	5 21 2.3	13.395
13	11 53 22.95	1.7762	5 7 38.1	13.411
14	11 55 9.48	1.7746	4 54 13.0	13.427
15	11 56 55.91	1.7731	4 40 46.9	13.442
16	11 58 42.25	1.7717	4 27 20.0	13.455
17	12 0 28.51	1.7702	4 13 52.3	13.467
18	12 2 14.68	1.7688	4 0 23.9	13.479
19	12 4 0.77	1.7676	3 46 54.8	13.491
20	12 5 46.79	1.7665	3 33 25.0	13.502
21	12 7 32.75	1.7654	3 19 54.5	13.513
22	12 9 18.64	1.7643	3 6 23.4	13.522
23	12 11 4.46	1.7632	N. 2 52 51.8	13.531

SUNDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 12 50.22	1.7623	N. 2 39 19.7	13.539
1	12 14 35.93	1.7614	2 25 47.1	13.546
2	12 16 21.59	1.7605	2 12 14.2	13.552
3	12 18 7.19	1.7597	1 58 40.9	13.557
4	12 19 52.75	1.7591	1 45 7.3	13.562
5	12 21 38.28	1.7585	1 31 33.4	13.567
6	12 23 23.77	1.7579	1 17 59.3	13.570
7	12 25 9.23	1.7574	1 4 25.0	13.573
8	12 26 54.66	1.7569	0 50 50.6	13.575
9	12 28 40.06	1.7565	0 37 16.0	13.577
10	12 30 25.44	1.7562	0 23 41.3	13.577
11	12 32 10.81	1.7560	N. 0 10 6.7	13.577
12	12 33 56.16	1.7558	S. 0 3 27.9	13.576
13	12 35 41.50	1.7557	0 17 2.4	13.574
14	12 37 26.84	1.7557	0 30 36.8	13.572
15	12 39 12.18	1.7557	0 44 11.0	13.569
16	12 40 57.52	1.7557	0 57 45.0	13.565
17	12 42 42.86	1.7558	1 11 18.8	13.561
18	12 44 28.21	1.7559	1 24 52.3	13.555
19	12 46 13.57	1.7562	1 38 25.4	13.548
20	12 47 58.95	1.7565	1 51 58.1	13.542
21	12 49 44.35	1.7569	2 5 30.4	13.535
22	12 51 29.78	1.7574	2 19 2.3	13.527
23	12 53 15.24	1.7578	2 32 33.6	13.517
24	12 55 0.72	1.7583	S. 2 46 4.3	13.507

MONDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 55 0.72	1.7583	S. 2 46 4.3	13.507
1	12 56 46.24	1.7590	2 59 34.4	13.497
2	12 58 31.80	1.7597	3 13 3.9	13.486
3	13 0 17.41	1.7605	3 26 32.7	13.474
4	13 2 3.06	1.7613	3 40 0.8	13.461
5	13 3 48.76	1.7621	3 53 28.0	13.447
6	13 5 34.51	1.7630	4 6 54.4	13.432
7	13 7 20.32	1.7640	4 20 19.9	13.417
8	13 9 6.19	1.7651	4 33 44.5	13.402
9	13 10 52.13	1.7662	4 47 8.2	13.386
10	13 12 38.13	1.7674	5 0 30.8	13.369
11	13 14 24.21	1.7686	5 13 52.4	13.351
12	13 16 10.36	1.7698	5 27 12.9	13.332
13	13 17 56.59	1.7712	5 40 32.3	13.312
14	13 19 42.91	1.7726	5 53 50.4	13.292
15	13 21 29.31	1.7741	6 7 7.3	13.272
16	13 23 15.80	1.7757	6 20 23.0	13.250
17	13 25 2.39	1.7772	6 33 37.3	13.227
18	13 26 49.07	1.7788	6 46 50.2	13.204
19	13 28 35.85	1.7806	7 0 1.7	13.180
20	13 30 22.74	1.7824	7 13 11.8	13.155
21	13 32 9.74	1.7842	7 26 20.3	13.129
22	13 33 56.85	1.7861	7 39 27.3	13.103
23	13 35 44.07	1.7880	S. 7 52 32.7	13.076

TUESDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 37 31.41	1.7900	S. 8 5 36.4	13.048
1	13 39 18.87	1.7921	8 18 38.4	13.019
2	13 41 6.46	1.7942	8 31 38.7	12.990
3	13 42 54.18	1.7964	8 44 37.2	12.959
4	13 44 42.03	1.7987	8 57 33.8	12.928
5	13 46 30.02	1.8009	9 10 28.6	12.897
6	13 48 18.14	1.8032	9 23 21.5	12.865
7	13 50 6.41	1.8057	9 36 12.4	12.833
8	13 51 54.83	1.8082	9 49 1.3	12.797
9	13 53 43.39	1.8107	10 1 48.0	12.761
10	13 55 32.11	1.8133	10 14 32.6	12.726
11	13 57 20.99	1.8159	10 27 15.1	12.690
12	13 59 10.02	1.8185	10 39 55.4	12.652
13	14 0 59.21	1.8213	10 52 33.4	12.614
14	14 2 48.57	1.8242	11 5 9.1	12.575
15	14 4 38.11	1.8271	11 17 42.4	12.535
16	14 6 27.82	1.8299	11 30 13.3	12.494
17	14 8 17.70	1.8328	11 42 41.7	12.452
18	14 10 7.76	1.8358	11 55 7.6	12.410
19	14 11 58.00	1.8389	12 7 30.9	12.367
20	14 13 48.43	1.8421	12 19 51.7	12.324
21	14 15 39.05	1.8453	12 82 9.8	12.279
22	14 17 29.86	1.8485	12 44 25.2	12.233
23	14 19 20.87	1.8518	12 56 37.8	12.187
24	14 21 12.07	1.8551	S. 13 8 47.6	12.140

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 21 12.07	1.8551	S. 13 8 47.6	12.140
1	14 23 3.48	1.8585	13 20 54.6	12.092
2	14 24 55.09	1.8619	13 32 58.6	12.042
3	14 26 46.91	1.8654	13 44 59.6	11.992
4	14 28 38.94	1.8689	13 56 57.6	11.942
5	14 30 31.18	1.8725	14 8 52.6	11.890
6	14 32 23.64	1.8762	14 20 44.4	11.837
7	14 34 16.32	1.8798	14 32 33.0	11.783
8	14 36 9.22	1.8835	14 44 18.4	11.730
9	14 38 2.34	1.8873	14 56 0.6	11.676
10	14 39 55.69	1.8912	15 7 39.5	11.620
11	14 41 49.28	1.8951	15 19 15.0	11.562
12	14 43 43.10	1.8990	15 30 47.0	11.504
13	14 45 37.16	1.9030	15 42 15.5	11.446
14	14 47 31.46	1.9070	15 53 40.5	11.387
15	14 49 26.00	1.9110	16 5 1.9	11.326
16	14 51 20.78	1.9150	16 16 19.6	11.265
17	14 53 15.80	1.9191	16 27 33.7	11.203
18	14 55 11.07	1.9233	16 38 44.0	11.140
19	14 57 6.60	1.9276	16 49 50.5	11.076
20	14 59 2.38	1.9319	17 0 53.1	11.011
21	15 0 58.42	1.9362	17 11 51.8	10.945
22	15 2 54.72	1.9405	17 22 46.5	10.878
23	15 4 51.28	1.9448	S. 17 33 37.2	10.811

THURSDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 6 48.10	1.9492	S. 17 44 23.8	10.742
1	15 8 45.19	1.9537	17 55 6.2	10.672
2	15 10 42.55	1.9582	18 5 44.5	10.602
3	15 12 40.17	1.9627	18 16 18.5	10.531
4	15 14 38.07	1.9673	18 26 48.2	10.458
5	15 16 36.25	1.9719	18 37 13.5	10.385
6	15 18 34.70	1.9765	18 47 34.4	10.311
7	15 20 33.43	1.9812	18 57 50.8	10.236
8	15 22 32.44	1.9859	19 8 2.7	10.160
9	15 24 31.74	1.9906	19 18 10.0	10.083
10	15 26 31.32	1.9953	19 28 12.6	10.005
11	15 28 31.18	2.0001	19 38 10.6	9.927
12	15 30 31.33	2.0049	19 48 3.8	9.847
13	15 32 31.77	2.0097	19 57 52.2	9.766
14	15 34 32.50	2.0146	20 7 35.7	9.683
15	15 36 33.52	2.0195	20 17 14.2	9.600
16	15 38 34.84	2.0244	20 26 47.7	9.517
17	15 40 36.45	2.0293	20 36 16.2	9.432
18	15 42 38.36	2.0343	20 45 39.6	9.347
19	15 44 40.57	2.0392	20 54 57.8	9.260
20	15 46 43.07	2.0442	21 4 10.8	9.172
21	15 48 45.87	2.0492	21 13 18.5	9.084
22	15 50 48.97	2.0542	21 22 20.9	8.995
23	15 52 52.38	2.0593	21 31 17.9	8.904
24	15 54 56.09	2.0643	S. 21 40 9.4	8.812

FRIDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 54 56.09	2.0643	S. 21 40 9.4	8.812
1	15 57 0.10	2.0693	21 48 55.4	8.720
2	15 59 4.41	2.0744	21 57 35.8	8.627
3	16 1 9.03	2.0795	22 6 10.6	8.532
4	16 3 13.95	2.0846	22 14 39.7	8.437
5	16 5 19.18	2.0897	22 23 3.1	8.341
6	16 7 24.72	2.0948	22 31 20.6	8.244
7	16 9 30.56	2.0999	22 39 32.3	8.146
8	16 11 36.71	2.1051	22 47 38.1	8.047
9	16 13 43.17	2.1102	22 55 37.9	7.946
10	16 15 49.93	2.1152	23 3 31.6	7.844
11	16 17 57.00	2.1203	23 11 19.2	7.742
12	16 20 4.37	2.1254	23 19 0.6	7.639
13	16 22 12.05	2.1306	23 26 35.8	7.535
14	16 24 20.04	2.1357	23 34 4.8	7.430
15	16 26 28.33	2.1407	23 41 27.4	7.324
16	16 28 36.93	2.1458	23 48 43.6	7.217
17	16 30 45.83	2.1509	23 55 53.4	7.109
18	16 32 55.04	2.1560	24 2 56.7	7.000
19	16 35 4.55	2.1610	24 9 53.4	6.890
20	16 37 14.36	2.1661	24 16 43.5	6.779
21	16 39 24.48	2.1711	24 23 26.9	6.667
22	16 41 34.90	2.1761	24 30 3.6	6.555
23	16 43 45.61	2.1810	S. 24 36 33.5	6.441

SATURDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 45 56.62	2.1860	S. 24 42 56.5	6.326
1	16 48 7.93	2.1909	24 49 12.6	6.211
2	16 50 19.53	2.1958	24 55 21.8	6.095
3	16 52 31.43	2.2008	25 1 24.0	5.977
4	16 54 43.63	2.2057	25 7 19.1	5.858
5	16 56 56.11	2.2104	25 13 7.0	5.739
6	16 59 8.88	2.2152	25 18 47.8	5.620
7	17 1 21.94	2.2200	25 24 21.4	5.499
8	17 3 35.28	2.2248	25 29 47.7	5.377
9	17 5 48.91	2.2295	25 35 6.6	5.254
10	17 8 2.82	2.2341	25 40 18.1	5.130
11	17 10 17.00	2.2386	25 45 22.2	5.006
12	17 12 31.45	2.2432	25 50 18.8	4.880
13	17 14 46.18	2.2477	25 55 7.8	4.754
14	17 17 1.18	2.2522	25 59 49.2	4.627
15	17 19 16.45	2.2567	26 4 23.0	4.499
16	17 21 31.98	2.2611	26 8 49.1	4.370
17	17 23 47.78	2.2655	26 13 7.4	4.240
18	17 26 3.84	2.2698	26 17 17.9	4.110
19	17 28 20.15	2.2740	26 21 20.6	3.979
20	17 30 36.72	2.2782	26 25 15.4	3.847
21	17 32 53.54	2.2823	26 29 2.2	3.713
22	17 35 10.60	2.2863	26 32 41.0	3.579
23	17 37 27.90	2.2904	26 36 11.7	3.444
24	17 39 45.45	2.2944	S. 26 39 34.3	3.309

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	17 39 45.45	2.2944	S.26 39 34.3	3.309
1	17 42 3.23	2.2963	26 42 48.8	3.174
2	17 44 21.24	2.3022	26 45 55.2	3.037
3	17 46 39.49	2.3060	26 48 53.3	2.899
4	17 48 57.96	2.3096	26 51 43.1	2.761
5	17 51 16.64	2.3132	26 54 24.6	2.622
6	17 53 35.54	2.3167	26 56 57.8	2.483
7	17 55 54.65	2.3202	26 59 22.6	2.343
8	17 58 13.97	2.3237	27 1 38.9	2.202
9	18 0 33.50	2.3271	27 3 46.8	2.061
10	18 2 53.22	2.3304	27 5 46.2	1.918
11	18 5 13.14	2.3336	27 7 37.0	1.775
12	18 7 33.25	2.3367	27 9 19.2	1.632
13	18 9 53.54	2.3398	27 10 52.8	1.488
14	18 12 14.02	2.3428	27 12 17.7	1.343
15	18 14 34.68	2.3457	27 13 34.0	1.198
16	18 16 55.51	2.3485	27 14 41.5	1.053
17	18 19 16.50	2.3512	27 15 40.3	0.907
18	18 21 37.65	2.3538	27 16 30.3	0.760
19	18 23 58.96	2.3564	27 17 11.5	0.612
20	18 26 20.42	2.3589	27 17 43.8	0.464
21	18 28 42.03	2.3614	27 18 7.2	0.316
22	18 31 3.79	2.3638	27 18 21.7	0.167
23	18 33 25.69	2.3661	S.27 18 27.3	− 0.019

MONDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	18 35 47.72	2.3683	S.27 18 24.0	+ 0.130
1	18 38 9.88	2.3703	27 18 11.7	0.280
2	18 40 32.16	2.3722	27 17 50.4	0.431
3	18 42 54.55	2.3741	27 17 20.0	0.582
4	18 45 17.05	2.3758	27 16 40.6	0.733
5	18 47 39.65	2.3775	27 15 52.1	0.884
6	18 50 2.35	2.3792	27 14 54.5	1.036
7	18 52 25.15	2.3807	27 13 47.8	1.187
8	18 54 48.04	2.3822	27 12 32.0	1.339
9	18 57 11.02	2.3836	27 11 7.1	1.492
10	18 59 34.07	2.3849	27 9 33.0	1.644
11	19 1 57.20	2.3861	27 7 49.8	1.797
12	19 4 20.40	2.3872	27 5 57.4	1.950
13	19 6 43.66	2.3882	27 3 55.8	2.103
14	19 9 6.98	2.3891	27 1 45.0	2.257
15	19 11 30.35	2.3899	26 59 25.0	2.411
16	19 13 53.77	2.3907	26 56 55.7	2.565
17	19 16 17.23	2.3913	26 54 17.2	2.719
18	19 18 40.72	2.3918	26 51 29.5	2.873
19	19 21 4.24	2.3923	26 48 32.5	3.027
20	19 23 27.79	2.3927	26 45 26.3	3.180
21	19 25 51.37	2.3931	26 42 10.9	3.334
22	19 28 14.96	2.3933	26 38 46.2	3.488
23	19 30 38.56	2.3934	26 35 12.3	3.642
24	19 33 2.17	2.3935	S.26 31 29.2	3.796

TUESDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
	h m s	s	° ′ ″	″
0	19 33 2.17	2.3935	S.26 31 29.2	3.796
1	19 35 25.78	2.3934	26 27 36.8	3.950
2	19 37 49.38	2.3932	26 23 35.2	4.104
3	19 40 12.97	2.3930	26 19 24.3	4.258
4	19 42 36.54	2.3928	26 15 4.2	4.412
5	19 45 0.10	2.3925	26 10 34.9	4.565
6	19 47 23.64	2.3921	26 5 56.4	4.718
7	19 49 47.15	2.3915	26 1 8.7	4.872
8	19 52 10.62	2.3908	25 56 11.8	5.025
9	19 54 34.05	2.3901	25 51 5.7	5.177
10	19 56 57.44	2.3894	25 45 50.5	5.330
11	19 59 20.78	2.3887	25 40 26.1	5.483
12	20 1 44.08	2.3878	25 34 52.5	5.636
13	20 4 7.32	2.3868	25 29 9.8	5.787
14	20 6 30.50	2.3857	25 23 18.1	5.938
15	20 8 53.61	2.3846	25 17 17.3	6.089
16	20 11 16.65	2.3834	25 11 7.4	6.240
17	20 13 39.62	2.3822	25 4 48.5	6.391
18	20 16 2.52	2.3809	24 58 20.5	6.542
19	20 18 25.33	2.3795	24 51 43.5	6.691
20	20 20 48.06	2.3781	24 44 57.6	6.840
21	20 23 10.71	2.3767	24 38 2.7	6.989
22	20 25 33.27	2.3752	24 30 58.9	7.137
23	20 27 55.73	2.3735	S.24 23 46.2	7.285

WEDNESDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
0	20 30 18.09	2.3718	S.24 16 24.7	7.433
1	20 32 40.35	2.3701	24 8 54.3	7.580
2	20 35 2.51	2.3684	24 1 15.1	7.726
3	20 37 24.56	2.3666	23 53 27.2	7.872
4	20 39 46.50	2.3647	23 45 30.5	8.017
5	20 42 8.33	2.3629	23 37 25.1	8.162
6	20 44 30.05	2.3610	23 29 11.0	8.307
7	20 46 51.65	2.3589	23 20 48.3	8.450
8	20 49 13.12	2.3568	23 12 17.0	8.593
9	20 51 34.47	2.3548	23 3 37.2	8.735
10	20 53 55.70	2.3527	22 54 48.8	8.877
11	20 56 16.80	2.3506	22 45 52.0	9.018
12	20 58 37.77	2.3484	22 36 46.7	9.158
13	21 0 58.61	2.3462	22 27 33.0	9.298
14	21 3 19.32	2.3440	22 18 11.0	9.437
15	21 5 39.89	2.3417	22 8 40.6	9.575
16	21 8 0.32	2.3394	21 59 2.0	9.712
17	21 10 20.62	2.3371	21 49 15.2	9.848
18	21 12 40.78	2.3348	21 39 20.2	9.984
19	21 15 0.80	2.3324	21 29 17.1	10.119
20	21 17 20.67	2.3300	21 19 5.9	10.253
21	21 19 40.40	2.3277	21 8 46.7	10.387
22	21 21 59.99	2.3253	20 58 19.5	10.519
23	21 24 19.43	2.3228	20 47 44.4	10.651
24	21 26 38.73	2.3204	S.20 37 1.4	10.782

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 21.					**SATURDAY 23.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	21 26 38.73	2.3204	S. 20 37 1.4	10.782	0	23 15 25.64	2.2237	S. 9 48 54.1	15.757
1	21 28 57.88	2.3179	20 26 10.6	10.912	1	23 17 39.03	2.2227	9 33 6.5	15.828
2	21 31 16.88	2.3155	20 15 12.0	11.041	2	23 19 52.37	2.2218	9 17 14.7	15.898
3	21 33 35.74	2.3131	20 4 5.7	11.169	3	23 22 5.65	2.2209	9 1 18.7	15.967
4	21 35 54.45	2.3106	19 52 51.7	11.296	4	23 24 18.88	2.2201	8 45 18.7	16.033
5	21 38 13.01	2.3082	19 41 30.2	11.421	5	23 26 32.06	2.2193	8 29 14.7	16.099
6	21 40 31.43	2.3057	19 30 1.2	11.546	6	23 28 45.19	2.2185	8 13 6.8	16.162
7	21 42 49.70	2.3032	19 18 24.7	11.671	7	23 30 58.28	2.2179	7 56 55.2	16.224
8	21 45 7.82	2.3007	19 6 40.7	11.794	8	23 33 11.34	2.2174	7 40 39.9	16.285
9	21 47 25.79	2.2983	18 54 49.4	11.916	9	23 35 24.37	2.2169	7 24 21.0	16.344
10	21 49 43.62	2.2959	18 42 50.8	12.037	10	23 37 37.37	2.2165	7 7 58.6	16.401
11	21 52 1.30	2.2934	18 30 44.9	12.158	11	23 39 50.35	2.2162	6 51 32.9	16.455
12	21 54 18.83	2.2910	18 18 31.8	12.277	12	23 42 3.31	2.2159	6 35 4.0	16.508
13	21 56 36.22	2.2886	18 6 11.6	12.395	13	23 44 16.26	2.2156	6 18 31.9	16.561
14	21 58 53.47	2.2862	17 53 44.4	12.512	14	23 46 29.19	2.2154	6 1 56.6	16.613
15	22 1 10.57	2.2838	17 41 10.2	12.627	15	23 48 42.11	2.2153	5 45 18.3	16.662
16	22 3 27.53	2.2815	17 28 29.1	12.742	16	23 50 55.03	2.2153	5 28 37.1	16.709
17	22 5 44.35	2.2791	17 15 41.1	12.856	17	23 53 7.95	2.2154	5 11 53.2	16.754
18	22 8 1.02	2.2768	17 2 46.4	12.968	18	23 55 20.88	2.2156	4 55 6.6	16.798
19	22 10 17.56	2.2745	16 49 45.0	13.079	19	23 57 33.82	2.2158	4 38 17.4	16.840
20	22 12 33.96	2.2722	16 36 36.9	13.191	20	23 59 46.77	2.2160	4 21 25.8	16.880
21	22 14 50.22	2.2699	16 23 22.1	13.301	21	0 1 59.74	2.2163	4 4 31.8	16.919
22	22 17 6.35	2.2677	16 10 0.8	13.408	22	0 4 12.73	2.2167	3 47 35.5	16.956
23	22 19 22.35	2.2655	S. 15 56 33.2	13.513	23	0 6 25.75	2.2172	S. 3 30 37.1	16.991
	FRIDAY 22.					**SUNDAY 24.**			
0	22 21 38.21	2.2633	S. 15 42 59.3	13.618	0	0 8 38.80	2.2178	S. 3 13 36.6	17.024
1	22 23 53.94	2.2612	15 29 19.1	13.723	1	0 10 51.89	2.2185	2 56 34.2	17.055
2	22 26 9.55	2.2592	15 15 32.6	13.827	2	0 13 5.02	2.2192	2 39 30.0	17.085
3	22 28 25.04	2.2571	15 1 39.9	13.928	3	0 15 18.19	2.2199	2 22 24.0	17.113
4	22 30 40.40	2.2550	14 47 41.2	14.028	4	0 17 31.41	2.2208	2 5 16.4	17.139
5	22 32 55.64	2.2530	14 33 36.5	14.128	5	0 19 44.69	2.2218	1 48 7.3	17.162
6	22 35 10.76	2.2510	14 19 25.8	14.227	6	0 21 58.03	2.2229	1 30 56.9	17.184
7	22 37 25.76	2.2491	14 5 9.3	14.323	7	0 24 11.44	2.2240	1 13 45.2	17.205
8	22 39 40.65	2.2472	13 50 47.1	14.418	8	0 26 24.91	2.2251	0 56 32.3	17.224
9	22 41 55.43	2.2454	13 36 19.2	14.512	9	0 28 38.45	2.2263	0 39 18.3	17.241
10	22 44 10.10	2.2436	13 21 45.7	14.604	10	0 30 52.07	2.2277	0 22 3.4	17.255
11	22 46 24.66	2.2419	13 7 6.7	14.696	11	0 33 5.77	2.2291	S. 0 4 47.7	17.268
12	22 48 39.12	2.2402	12 52 22.2	14.787	12	0 35 19.56	2.2306	N. 0 12 28.8	17.280
13	22 50 53.48	2.2385	12 37 32.3	14.875	13	0 37 33.44	2.2322	0 29 45.9	17.288
14	22 53 7.74	2.2368	12 22 37.2	14.962	14	0 39 47.42	2.2338	0 47 3.4	17.295
15	22 55 21.90	2.2352	12 7 36.9	15.048	15	0 42 1.49	2.2354	1 4 21.3	17.301
16	22 57 35.97	2.2338	11 52 31.5	15.133	16	0 44 15.67	2.2372	1 21 39.5	17.304
17	22 59 49.96	2.2324	11 37 21.0	15.216	17	0 46 29.96	2.2391	1 38 57.8	17.305
18	23 2 3.86	2.2309	11 22 5.6	15.298	18	0 48 44.36	2.2410	1 56 16.1	17.304
19	23 4 17.67	2.2296	11 6 45.3	15.378	19	0 50 58.88	2.2430	2 13 34.3	17.302
20	23 6 31.41	2.2283	10 51 20.2	15.457	20	0 53 13.52	2.2451	2 30 52.3	17.297
21	23 8 45.07	2.2271	10 35 50.5	15.533	21	0 55 28.29	2.2473	2 48 10.0	17.291
22	23 10 58.66	2.2259	10 20 16.2	15.609	22	0 57 43.19	2.2495	3 5 27.2	17.282
23	23 13 12.18	2.2248	10 4 37.4	15.684	23	0 59 58.23	2.2518	3 22 43.8	17.271
24	23 15 25.64	2.2237	S. 9 48 54.1	15.757	24	1 2 13.41	2.2542	N. 3 39 59.7	17.258

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
	MONDAY 25.					**WEDNESDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	1 2 13.41	2.2542	N. 3 39 59.7	17.258	0	2 54 23.62	2.4387	N.16 34 11.4	14.193
1	1 4 28.73	2.2566	3 57 14.8	17.243	1	2 56 50.09	2.4435	16 48 19.6	14.078
2	1 6 44.20	2.2592	4 14 28.9	17.227	2	2 59 16.84	2.4482	17 2 20.8	13.962
3	1 8 59.83	2.2618	4 31 42.0	17.208	3	3 1 43.87	2.4529	17 16 15.0	13.843
4	1 11 15.62	2.2645	4 48 53.9	17.187	4	3 4 11.19	2.4577	17 30 2.0	13.722
5	1 13 31.57	2.2672	5 6 4.5	17.164	5	3 6 38.79	2.4624	17 43 41.7	13.600
6	1 15 47.68	2.2699	5 23 13.6	17.139	6	3 9 6.68	2.4672	17 57 14.0	13.476
7	1 18 3.96	2.2728	5 40 21.2	17.112	7	3 11 34.85	2.4719	18 10 38.8	13.350
8	1 20 20.42	2.2759	5 57 27.1	17.083	8	3 14 3.30	2.4766	18 23 56.0	13.222
9	1 22 37.07	2.2790	6 14 31.2	17.052	9	3 16 32.04	2.4813	18 37 5.5	13.092
10	1 24 53.90	2.2820	6 31 33.3	17.018	10	3 19 1.06	2.4859	18 50 7.1	12.960
11	1 27 10.91	2.2851	6 48 33.4	16.983	11	3 21 30.35	2.4905	19 3 0.7	12.827
12	1 29 28.11	2.2883	7 5 31.3	16.946	12	3 23 59.92	2.4952	19 15 46.3	12.692
13	1 31 45.51	2.2916	7 22 26.9	16.906	13	3 26 29.77	2.4998	19 28 23.7	12.554
14	1 34 3.11	2.2950	7 39 20.0	16.864	14	3 28 59.89	2.5043	19 40 52.8	12.416
15	1 36 20.91	2.2984	7 56 10.6	16.821	15	3 31 30.29	2.5089	19 53 13.6	12.276
16	1 38 38.92	2.3019	8 12 58.5	16.775	16	3 34 0.96	2.5134	20 5 25.9	12.133
17	1 40 57.14	2.3055	8 29 43.6	16.727	17	3 36 31.89	2.5178	20 17 29.6	11.989
18	1 43 15.58	2.3091	8 46 25.7	16.677	18	3 39 3.09	2.5222	20 29 24.6	11.843
19	1 45 34.23	2.3128	9 3 4.8	16.625	19	3 41 34.55	2.5265	20 41 10.8	11.697
20	1 47 53.11	2.3165	9 19 40.7	16.570	20	3 44 6.27	2.5308	20 52 48.2	11.548
21	1 50 12.21	2.3202	9 36 13.2	16.513	21	3 46 38.25	2.5351	21 4 16.6	11.397
22	1 52 31.54	2.3241	9 52 42.3	16.455	22	3 49 10.48	2.5393	21 15 35.9	11.245
23	1 54 51.10	2.3280	N.10 9 7.8	16.394	23	3 51 42.96	2.5434	N.21 26 46.0	11.092
	TUESDAY 26.					**THURSDAY 28.**			
0	1 57 10.90	2.3320	N.10 25 29.6	16.332	0	3 54 15.69	2.5475	N.21 37 46.9	10.937
1	1 59 30.94	2.3360	10 41 47.6	16.267	1	3 56 48.66	2.5515	21 48 38.5	10.781
2	2 1 51.22	2.3400	10 58 1.6	16.199	2	3 59 21.87	2.5555	21 59 20.6	10.622
3	2 4 11.74	2.3441	11 14 11.5	16.130	3	4 1 55.32	2.5594	22 9 53.2	10.463
4	2 6 32.51	2.3483	11 30 17.2	16.059	4	4 4 29.00	2.5632	22 20 16.2	10.302
5	2 8 53.53	2.3525	11 46 18.6	15.986	5	4 7 2.90	2.5669	22 30 29.5	10.140
6	2 11 14.81	2.3567	12 2 15.5	15.910	6	4 9 37.02	2.5705	22 40 33.1	9.977
7	2 13 36.34	2.3610	12 18 7.8	15.832	7	4 12 11.36	2.5741	22 50 26.8	9.812
8	2 15 58.13	2.3653	12 33 55.4	15.752	8	4 14 45.91	2.5776	23 0 10.6	9.647
9	2 18 20.18	2.3697	12 49 38.1	15.670	9	4 17 20.67	2.5810	23 9 44.5	9.481
10	2 20 42.50	2.3742	13 5 15.8	15.586	10	4 19 55.63	2.5843	23 19 8.3	9.312
11	2 23 5.08	2.3786	13 20 48.4	15.500	11	4 22 30.78	2.5875	23 28 21.9	9.142
12	2 25 27.93	2.3831	13 36 15.8	15.412	12	4 25 6.13	2.5907	23 37 25.4	8.972
13	2 27 51.05	2.3876	13 51 37.8	15.321	13	4 27 41.66	2.5936	23 46 18.6	8.801
14	2 30 14.44	2.3922	14 6 54.3	15.229	14	4 30 17.36	2.5965	23 55 1.5	8.627
15	2 32 38.11	2.3967	14 22 5.3	15.136	15	4 32 53.24	2.5993	24 3 33.9	8.453
16	2 35 2.05	2.4013	14 37 10.6	15.039	16	4 35 29.28	2.6020	24 11 55.9	8.279
17	2 37 26.27	2.4059	14 52 10.0	14.939	17	4 38 5.48	2.6046	24 20 7.4	8.104
18	2 39 50.76	2.4105	15 7 3.3	14.838	18	4 40 41.83	2.6071	24 28 8.4	7.927
19	2 42 15.53	2.4152	15 21 50.5	14.736	19	4 43 18.33	2.6094	24 35 58.7	7.749
20	2 44 40.58	2.4199	15 36 31.6	14.632	20	4 45 54.96	2.6116	24 43 38.3	7.571
21	2 47 5.92	2.4246	15 51 6.4	14.526	21	4 48 31.72	2.6137	24 51 7.3	7.393
22	2 49 31.54	2.4293	16 5 34.7	14.417	22	4 51 8.60	2.6157	24 58 25.5	7.213
23	2 51 57.44	2.4340	16 19 56.4	14.306	23	4 53 45.60	2.6176	25 5 32.8	7.032
24	2 54 23.62	2.4387	N.16 34 11.4	14.193	24	4 56 22.71	2.6193	N.25 12 29.3	6.851

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 29.			
	h m s	s	° ′ ″	″
0	4 56 22.71	2.6193	N.25 12 29.3	6.851
1	4 58 59.92	2.6209	25 19 14.9	6.669
2	5 1 37.22	2.6224	25 25 49.6	6.486
3	5 4 14.61	2.6237	25 32 13.3	6.303
4	5 6 52.07	2.6249	25 38 26.0	6.120
5	5 9 29.60	2.6260	25 44 27.7	5.937
6	5 12 7.19	2.6269	25 50 18.4	5.752
7	5 14 44.83	2.6277	25 55 58.0	5.567
8	5 17 22.52	2.6284	26 1 26.5	5.382
9	5 20 0.24	2.6289	26 6 43.9	5.197
10	5 22 37.99	2.6292	26 11 50.1	5.011
11	5 25 15.75	2.6294	26 16 45.2	4.826
12	5 27 53.52	2.6295	26 21 29.2	4.640
13	5 30 31.29	2.6294	26 26 2.0	4.453
14	5 33 9.05	2.6292	26 30 23.6	4.267
15	5 35 46.80	2.6289	26 34 34.0	4.080
16	5 38 24.52	2.6283	26 38 33.2	3.893
17	5 41 2.20	2.6276	26 42 21.2	3.707
18	5 43 39.83	2.6267	26 45 58.0	3.520
19	5 46 17.41	2.6258	26 49 23.6	3.334
20	5 48 54.93	2.6247	26 52 38.1	3.148
21	5 51 32.37	2.6234	26 55 41.4	2.962
22	5 54 9.73	2.6220	26 58 33.6	2.777
23	5 56 47.01	2.6204	N.27 1 14.6	2.591
	SATURDAY 30.			
0	5 59 24.18	2.6186	N.27 3 44.5	2.406
1	6 2 1.24	2.6167	27 6 3.3	2.221
2	6 4 38.19	2.6147	27 8 11.0	2.036
3	6 7 15.01	2.6125	27 10 7.6	1.851
4	6 9 51.69	2.6102	27 11 53.2	1.667
5	6 12 28.23	2.6078	27 13 27.7	1.483
6	6 15 4.62	2.6052	27 14 51.2	1.301
7	6 17 40.85	2.6023	27 16 3.8	1.119
8	6 20 16.90	2.5993	27 17 5.4	0.937
9	6 22 52.77	2.5962	27 17 56.2	0.757
10	6 25 28.45	2.5931	27 18 36.2	0.576
11	6 28 3.94	2.5897	27 19 5.3	0.395
12	6 30 39.22	2.5862	27 19 23.6	0.216
13	6 33 14.28	2.5826	27 19 31.2	+ 0.038
14	6 35 49.13	2.5789	27 19 28.2	− 0.139
15	6 38 23.75	2.5750	27 19 14.5	0.316
16	6 40 58.13	2.5710	27 18 50.2	0.492
17	6 43 32.27	2.5668	27 18 15.4	0.668
18	6 46 6.15	2.5625	27 17 30.0	0.843
19	6 48 39.77	2.5581	27 16 34.2	1.017
20	6 51 13.12	2.5536	27 15 28.0	1.188
21	6 53 46.20	2.5490	27 14 11.6	1.359
22	6 56 19.00	2.5442	27 12 44.9	1.530
23	6 58 51.51	2.5392	27 11 8.0	1.700
24	7 1 23.71	2.5342	N.27 9 20.9	1.868

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY, MAY 1.			
	h m s	s	° ′ ″	″
0	7 1 23.71	2.5342	N.27 9 20.9	1.868

PHASES OF THE MOON.

		d	h	m
☽ First Quarter	. April	3	18	21.2
○ Full Moon	. . . .	11	18	26.0
☾ Last Quarter	. . . .	19	18	0.4
● New Moon	. . . .	26	9	46.5

		d	h
☾ Apogee . . .	. April	11	11.4
☾ Perigee		25	21.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	III$^{\text{h}}$.	P. L. of Diff.	VI$^{\text{h}}$.	P. L. of Diff.	IX$^{\text{h}}$.	P. L. of Diff.
1	SUN	W.	54° 55′ 41″	2576	56° 35′ 9″	2594	58° 14′ 12″	2612	59° 52′ 51″	2630
	Pollux	E.	44 43 10	2262	42 56 15	2279	41 9 45	2297	39 23 41	2314
	Regulus	E.	81 11 9	2271	79 24 27	2288	77 38 10	2306	75 52 19	2323
2	SUN	W.	67 59 52	2723	69 36 1	2742	71 11 45	2761	72 47 4	2779
	VENUS	W.	24 29 51	2766	26 5 3	2785	27 39 51	2803	29 14 15	2822
	Pollux	E.	30 39 51	2406	28 56 25	2425	27 13 26	2444	25 30 54	2463
	Regulus	E.	67 9 28	2413	65 26 12	2431	63 43 21	2449	62 0 56	2467
	SATURN	E.	94 11 2	2375	92 26 51	2392	90 43 5	2410	88 59 44	2427
3	SUN	W.	80 37 35	2873	82 10 29	2891	83 43 0	2909	85 15 8	2926
	VENUS	W.	37 0 14	2914	38 32 15	2932	40 3 53	2950	41 35 9	2968
	Aldebaran	W.	28 5 1	2692	29 41 52	2693	31 18 41	2697	32 55 25	2703
	Regulus	E.	53 35 15	2559	51 55 23	2576	50 15 55	2594	48 36 52	2612
	SATURN	E.	80 29 10	2514	78 48 16	2531	77 7 46	2548	75 27 39	2564
	Spica	E.	107 37 46	2548	105 57 40	2565	104 17 57	2582	102 38 37	2599
4	SUN	W.	92 50 16	3012	94 20 14	3029	95 49 51	3045	97 19 8	3060
	VENUS	W.	49 5 58	3054	50 35 4	3069	52 3 51	3086	53 32 18	3102
	Aldebaran	W.	40 56 39	2747	42 32 17	2756	44 7 42	2767	45 42 53	2779
	Regulus	E.	40 27 41	2701	38 51 3	2719	37 14 48	2737	35 38 57	2755
	SATURN	E.	67 12 40	2644	65 34 45	2659	63 57 10	2675	62 19 56	2689
	Spica	E.	94 27 29	2678	92 50 19	2693	91 13 30	2708	89 37 1	2722
5	SUN	W.	104 40 52	3135	106 8 19	3148	107 35 30	3163	109 2 24	3176
	VENUS	W.	60 49 50	3176	62 16 28	3190	63 42 49	3204	65 8 54	3217
	Aldebaran	W.	53 35 9	2833	55 8 54	2845	56 42 24	2855	58 15 40	2866
	SATURN	E.	54 18 30	2758	52 43 7	2772	51 8 2	2784	49 33 13	2796
	Spica	E.	81 39 19	2792	80 4 41	2805	78 30 19	2818	76 56 14	2830
6	SUN	W.	116 13 5	3236	117 38 31	3248	119 3 43	3259	120 28 42	3270
	VENUS	W.	72 15 33	3277	73 40 11	3288	75 4 36	3299	76 28 49	3310
	Aldebaran	W.	65 58 44	2916	67 30 43	2925	69 2 30	2934	70 34 6	2943
	Pollux	W.	21 41 17	2891	23 13 47	2899	24 46 7	2908	26 18 16	2916
	SATURN	E.	41 43 1	2853	40 9 42	2864	38 36 37	2874	37 3 45	2884
	Spica	E.	69 9 42	2887	67 37 7	2898	66 4 46	2909	64 32 38	2918
7	Aldebaran	W.	78 9 21	2984	79 39 54	2991	81 10 18	2998	82 40 33	3005
	Pollux	W.	33 56 27	2954	35 27 37	2962	36 58 37	2969	38 29 29	2976
	SATURN	E.	29 22 30	2931	27 50 50	2939	26 19 20	2947	24 48 1	2955
	Spica	E.	56 55 0	2965	55 24 3	2973	53 53 16	2981	52 22 39	2989
	Antares	E.	102 45 57	2952	101 14 44	2959	99 43 40	2967	98 12 46	2974
8	Aldebaran	W.	90 9 44	3036	91 39 12	3042	93 8 33	3047	94 37 47	3052
	Pollux	W.	46 1 47	3005	47 31 53	3011	49 1 52	3016	50 31 45	3020
	Spica	E.	44 51 57	3025	43 22 15	3032	41 52 42	3039	40 23 17	3046
	Antares	E.	90 40 22	3005	89 10 16	3011	87 40 17	3016	86 10 24	3021
9	Pollux	W.	57 59 50	3040	59 29 13	3044	60 58 31	3047	62 27 46	3050
	Regulus	W.	21 58 40	3136	23 26 6	3128	24 53 42	3122	26 21 25	3117
	Spica	E.	32 58 17	3079	31 29 42	3086	30 1 15	3094	28 32 58	3101
	Antares	E.	78 42 25	3042	77 13 4	3046	75 43 48	3049	74 14 36	3052

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
1	Sun	W.	61° 31′ 5″	2649	63° 8′ 54″	2666	64° 46′ 19″	2686	66° 23′ 18″	2704
	Pollux	E.	37 38 2	2333	35 52 50	2350	34 8 4	2368	32 23 44	2387
	Regulus	E.	74 6 53	2341	72 21 53	2359	70 37 19	2377	68 53 11	2394
2	Sun	W.	74 21 59	2798	75 56 29	2817	77 30 35	2835	79 4 17	2854
	Venus	W.	30 48 14	2841	32 21 49	2859	33 55 1	2877	35 27 49	2805
	Pollux	E.	23 48 49	2483	22 7 12	2504	20 26 4	2525	18 45 25	2545
	Regulus	E.	60 18 57	2485	58 37 23	2504	56 56 15	2522	55 15 32	2540
	Saturn	E.	87 16 48	2445	85 34 17	2462	83 52 10	2480	82 10 28	2497
3	Sun	W.	86 46 54	2944	88 18 17	2962	89 49 18	2978	91 19 58	2996
	Venus	W.	43 6 2	2985	44 36 33	3002	46 6 43	3020	47 36 31	3037
	Aldebaran	W.	34 32 1	2710	36 8 28	2718	37 44 44	2727	39 20 48	2737
	Regulus	E.	46 58 14	2630	45 20 0	2648	43 42 10	2666	42 4 44	2683
	Saturn	E.	73 47 55	2580	72 8 33	2597	70 29 34	2612	68 50 56	2629
	Spica	E.	100 59 40	2615	99 21 5	2630	97 42 51	2646	96 4 59	2663
4	Sun	W.	98 48 6	3076	100 16 45	3091	101 45 5	3106	103 13 7	3120
	Venus	W.	55 0 25	3118	56 28 13	3133	57 55 43	3148	59 22 55	3162
	Aldebaran	W.	47 17 49	2789	48 52 31	2801	50 26 58	2811	52 1 11	2823
	Regulus	E.	34 3 30	2773	32 28 27	2792	30 53 49	2811	29 19 35	2830
	Saturn	E.	60 43 1	2704	59 6 26	2717	57 30 9	2731	55 54 10	2745
	Spica	E.	88 0 51	2737	86 25 0	2751	84 49 28	2765	83 14 14	2779
5	Sun	W.	110 29 2	3188	111 55 25	3201	113 21 33	3214	114 47 26	3225
	Venus	W.	66 34 43	3230	68 0 17	3242	69 25 37	3254	70 50 42	3266
	Aldebaran	W.	59 48 43	2876	61 21 32	2886	62 54 9	2896	64 26 33	2906
	Saturn	E.	47 58 40	2808	46 24 23	2820	44 50 21	2831	43 16 34	2842
	Spica	E.	75 22 25	2842	73 48 52	2854	72 15 34	2866	70 42 31	2876
6	Sun	W.	121 53 29	3280	123 18 4	3289	124 42 28	3300	126 6 40	3308
	Venus	W.	77 52 49	3319	79 16 38	3329	80 40 16	3338	82 3 43	3348
	Aldebaran	W.	72 5 30	2952	73 36 43	2960	75 7 46	2969	76 38 38	2976
	Pollux	W.	27 50 14	2924	29 22 2	2932	30 53 40	2940	32 25 8	2947
	Saturn	E.	35 31 6	2894	33 58 40	2903	32 26 25	2912	30 54 22	2921
	Spica	E.	63 0 42	2928	61 28 59	2938	59 57 28	2946	58 26 8	2956
7	Aldebaran	W.	84 10 39	3012	85 40 37	3018	87 10 27	3025	88 40 9	3030
	Pollux	W.	40 0 12	2982	41 30 47	2989	43 1 14	2994	44 31 34	3000
	Saturn	E.	23 16 52	2963	21 45 53	2972	20 15 5	2980	18 44 27	2989
	Spica	E.	50 52 12	2996	49 21 54	3004	47 51 46	3011	46 21 47	3018
	Antares	E.	96 42 1	2981	95 11 24	2988	93 40 56	2993	92 10 35	3000
8	Aldebaran	W.	96 6 55	3057	97 35 57	3061	99 4 54	3066	100 33 45	3070
	Pollux	W.	52 1 33	3025	53 31 15	3030	55 0 51	3033	56 30 23	3037
	Spica	E.	38 54 1	3052	37 24 53	3059	35 55 53	3065	34 27 1	3072
	Antares	E.	84 40 37	3026	83 10 56	3030	81 41 21	3034	80 11 51	3038
9	Pollux	W.	63 56 57	3052	65 26 5	3056	66 55 9	3057	68 24 11	3060
	Regulus	W.	27 49 14	3113	29 17 8	3110	30 45 5	3108	32 13 5	3105
	Spica	E.	27 4 50	3110	25 36 53	3120	24 9 8	3131	22 41 36	3143
	Antares	E.	72 45 27	3055	71 16 22	3057	69 47 20	3060	68 18 22	3062

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Pollux	W.	69° 53′ 10″	3061	71° 22′ 7″	3064	72° 51′ 1″	3065	74° 19′ 54″	3066
	Regulus	W.	33 41 8	3104	35 9 13	3103	36 37 19	3102	38 5 26	3101
	Antares	E.	66 49 26	3065	65 20 33	3066	63 51 42	3069	62 22 54	3069
11	Pollux	W.	81 43 56	3071	83 12 41	3071	84 41 26	3071	86 10 11	3071
	Regulus	W.	45 26 23	3096	46 54 38	3095	48 22 54	3094	49 51 11	3093
	Antares	E.	54 59 15	3075	53 30 35	3076	52 1 56	3076	50 33 17	3077
	Mars	E.	92 58 21	3287	91 33 54	3287	90 9 27	3288	88 45 1	3287
12	Pollux	W.	93 34 0	3069	95 2 48	3068	96 31 37	3067	98 0 27	3065
	Regulus	W.	57 12 57	3087	58 41 23	3085	60 9 51	3083	61 38 21	3081
	Saturn	W.	30 42 55	3049	32 12 7	3048	33 41 20	3046	35 10 36	3045
	Antares	E.	43 10 7	3077	41 41 29	3076	40 12 50	3076	38 44 11	3075
	Mars	E.	81 42 43	3285	80 18 14	3283	78 53 43	3282	77 29 11	3281
	α Aquilæ	E.	93 9 36	3899	91 56 15	3896	90 42 51	3895	89 29 26	3894
13	Regulus	W.	69 1 28	3071	70 30 13	3068	71 59 2	3065	73 27 54	3062
	Saturn	W.	42 37 24	3035	44 6 53	3032	45 36 26	3030	47 6 2	3027
	Mars	E.	70 26 2	3271	69 1 17	3270	67 36 30	3267	66 11 40	3265
	α Aquilæ	E.	83 22 23	3902	82 9 5	3905	80 55 50	3910	79 42 40	3916
14	Regulus	W.	80 53 13	3045	82 22 30	3042	83 51 51	3037	85 21 18	3033
	Saturn	W.	54 34 57	3010	56 4 57	3007	57 35 1	3003	59 5 10	2998
	Spica	W.	26 55 56	3086	28 24 23	3077	29 53 1	3069	31 21 49	3060
	Mars	E.	59 6 39	3248	57 41 27	3245	56 16 11	3241	54 50 50	3237
	α Aquilæ	E.	73 38 34	3958	72 26 13	3969	71 14 3	3982	70 2 6	3998
	Fomalhaut	E.	102 8 51	3210	100 42 54	3205	99 16 51	3199	97 50 41	3193
15	Regulus	W.	92 49 56	3008	94 19 59	3003	95 50 8	2997	97 20 24	2991
	Saturn	W.	66 37 22	2974	68 8 7	2969	69 38 59	2962	71 9 59	2957
	Spica	W.	38 48 12	3023	40 17 56	3015	41 47 50	3009	43 17 52	3001
	Mars	E.	47 42 51	3214	46 16 58	3209	44 50 59	3204	43 24 54	3198
	α Aquilæ	E.	64 6 24	4092	62 56 15	4117	61 46 30	4143	60 37 10	4174
	Fomalhaut	E.	90 38 12	3166	89 11 22	3161	87 44 26	3155	86 17 23	3150
16	Saturn	W.	78 46 58	2922	80 18 49	2915	81 50 49	2907	83 22 59	2899
	Spica	W.	50 50 28	2961	52 21 30	2953	53 52 42	2944	55 24 5	2935
	Mars	E.	36 12 46	3168	34 45 59	3163	33 19 5	3157	31 52 4	3151
	α Aquilæ	E.	54 58 24	4366	53 52 32	4416	52 47 25	4471	51 43 7	4530
	Fomalhaut	E.	79 0 29	3122	77 32 46	3116	76 4 56	3110	74 36 59	3105
	α Pegasi	E.	99 1 55	3333	97 38 22	3323	96 14 37	3313	94 50 40	3302
	Sun	E.	133 40 38	3308	132 16 36	3300	130 52 24	3290	129 28 1	3282
17	Saturn	W.	91 6 32	2854	92 39 50	2844	94 13 21	2833	95 47 6	2823
	Spica	W.	63 3 56	2887	64 36 32	2876	66 9 21	2866	67 42 24	2855
	Fomalhaut	E.	67 15 37	3079	65 47 2	3073	64 18 20	3069	62 49 32	3064
	α Pegasi	E.	87 48 6	3256	86 23 3	3247	84 57 50	3238	83 32 26	3231
	Sun	E.	122 23 20	3231	120 57 47	3220	119 32 1	3209	118 6 2	3197
18	Spica	W.	75 31 15	2796	77 5 48	2784	78 40 37	2771	80 15 43	2757
	Antares	W.	29 37 22	2801	31 11 48	2787	32 46 33	2773	34 21 36	2760
	Fomalhaut	E.	55 24 19	3047	53 55 5	3046	52 25 49	3045	50 56 32	3046

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P.L. of Diff.	XVh.	P.L. of Diff.	XVIIIh.	P.L. of Diff.	XXIh.	P.L. of Diff.
10	Pollux	W.	75° 48′ 45″	3067	77° 17′ 35″	3069	78° 46′ 23″	3069	80° 15′ 10″	3070
	Regulus	W.	39 33 35	3100	41 1 45	3098	42 29 57	3098	43 58 9	3096
	Antares	E.	60 54 7	3071	59 25 22	3072	57 56 38	3073	56 27 56	3074
11	Pollux	W.	87 38 56	3071	89 7 41	3070	90 36 27	3070	92 5 13	3069
	Regulus	W.	51 19 29	3091	52 47 49	3091	54 16 10	3089	55 44 33	3088
	Antares	E.	49 4 39	3077	47 36 1	3077	46 7 23	3077	44 38 45	3077
	Mars	E.	87 20 34	3987	85 56 7	3987	84 31 40	3986	83 7 12	3985
12	Pollux	W.	99 29 19	3065	100 58 12	3064	102 27 8	3060	103 56 6	3059
	Regulus	W.	63 6 54	3079	64 35 29	3078	66 4 6	3075	67 32 46	3073
	Saturn	W.	36 39 53	3043	38 9 12	3041	39 38 34	3039	41 7 58	3038
	Antares	E.	37 15 31	3074	35 46 50	3074	34 18 9	3073	32 49 27	3072
	Mars	E.	76 4 37	3979	74 40 1	3978	73 15 24	3976	71 50 44	3974
	α Aquilæ	E.	88 16 0	3894	87 2 34	3895	85 49 9	3896	84 35 45	3898
13	Regulus	W.	74 56 50	3059	76 25 50	3056	77 54 53	3052	79 24 1	3049
	Saturn	W.	48 35 41	3024	50 5 24	3021	51 35 11	3018	53 5 2	3014
	Mars	E.	64 46 47	3961	63 21 50	3959	61 56 50	3955	60 31 46	3953
	α Aquilæ	E.	78 29 36	3921	77 16 38	3929	76 3 48	3937	74 51 6	3947
14	Regulus	W.	86 50 50	3028	88 20 28	3024	89 50 11	3019	91 20 0	3014
	Saturn	W.	60 35 25	2994	62 5 45	2989	63 36 11	2985	65 6 43	2979
	Spica	W.	32 50 47	3053	34 19 54	3045	35 49 11	3038	37 18 37	3030
	Mars	E.	53 25 25	3233	51 59 55	3228	50 34 19	3224	49 8 38	3219
	α Aquilæ	E.	68 50 24	4013	67 38 57	4030	66 27 47	4048	65 16 55	4070
	Fomalhaut	E.	96 24 24	3188	94 58 1	3183	93 31 31	3178	92 4 55	3172
15	Regulus	W.	98 50 48	2985	100 21 19	2978	101 51 59	2972	103 22 47	2965
	Saturn	W.	72 41 6	2950	74 12 21	2943	75 43 45	2937	77 15 17	2930
	Spica	W.	44 48 4	2993	46 18 25	2985	47 48 56	2977	49 19 37	2969
	Mars	E.	41 58 42	3192	40 32 23	3187	39 5 58	3181	37 39 26	3174
	α Aquilæ	E.	59 28 19	4205	58 19 58	4240	57 12 10	4279	56 4 58	4320
	Fomalhaut	E.	84 50 14	3144	83 22 58	3138	81 55 35	3133	80 28 5	3128
16	Saturn	W.	84 55 19	2891	86 27 50	2882	88 0 32	2873	89 33 26	2863
	Spica	W.	56 55 39	2926	58 27 25	2916	59 59 23	2907	61 31 33	2897
	Mars	E.	30 24 56	3145	28 57 41	3139	27 30 19	3133	26 2 50	3128
	α Aquilæ	E.	50 39 41	4595	49 37 12	4669	48 35 46	4747	47 35 26	4836
	Fomalhaut	E.	73 8 56	3100	71 40 46	3094	70 12 29	3089	68 44 6	3084
	α Pegasi	E.	93 26 31	3293	92 2 11	3283	90 37 40	3274	89 12 58	3265
	Sun	E.	128 3 28	3272	126 38 44	3262	125 13 48	3252	123 48 40	3242
17	Saturn	W.	97 21 4	2812	98 55 16	2801	100 29 43	2790	102 4 24	2778
	Spica	W.	69 15 40	2844	70 49 11	2832	72 22 57	2821	73 56 58	2808
	Fomalhaut	E.	61 20 38	3060	59 51 39	3056	58 22 36	3053	56 53 29	3051
	α Pegasi	E.	82 6 53	3222	80 41 10	3214	79 15 18	3208	77 49 18	3200
	Sun	E.	116 39 49	3184	115 13 21	3173	113 46 39	3160	112 19 42	3147
18	Spica	W.	81 51 7	2744	83 26 48	2731	85 2 47	2716	86 39 5	2702
	Antares	W.	35 56 57	2745	37 32 37	2730	39 8 37	2716	40 44 56	2701
	Fomalhaut	E.	49 27 16	3047	47 58 2	3050	46 28 51	3054	44 59 45	3060

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
18	α Pegasi	E.	76 23 9	3193	74 56 52	3188	73 30 28	3182	72 3 57	3177
	JUPITER	E.	89 45 25	2868	88 12 25	2855	86 39 8	2842	85 5 35	2828
	SUN	E.	110 52 29	3133	109 25 0	3120	107 57 15	3106	106 29 13	3091
19	Spica	W.	88 15 42	2688	89 52 38	2673	91 29 54	2658	93 7 30	2643
	Antares	W.	42 21 34	2686	43 58 33	2671	45 35 52	2655	47 13 32	2640
	Fomalhaut	E.	43 30 47	3069	42 1 59	3079	40 33 24	3093	39 5 6	3110
	α Pegasi	E.	64 50 1	3159	63 23 3	3159	61 56 5	3159	60 29 7	3162
	JUPITER	E.	77 13 21	2758	75 37 58	2744	74 2 16	2728	72 26 13	2713
	SUN	E.	99 4 33	3016	97 34 40	3001	96 4 28	2984	94 33 55	2968
20	Antares	W.	55 27 15	2559	57 7 7	2543	58 47 21	2526	60 27 58	2509
	α Pegasi	E.	53 15 29	3196	51 49 15	3210	50 23 18	3227	48 57 41	3247
	JUPITER	E.	64 20 46	2632	62 42 35	2616	61 4 2	2599	59 25 6	2582
	SUN	E.	86 55 57	2882	85 23 15	2865	83 50 11	2847	82 16 44	2828
21	Antares	W.	68 57 2	2424	70 40 3	2406	72 23 29	2389	74 7 20	2372
	MARS	W.	25 40 36	2638	27 18 40	2614	28 57 16	2592	30 36 22	2570
	JUPITER	E.	51 4 35	2497	49 23 17	2480	47 41 36	2463	45 59 31	2445
	SUN	E.	74 23 33	2738	72 47 43	2719	71 11 28	2701	69 34 49	2682
22	Antares	W.	82 52 42	2287	84 39 0	2270	86 25 43	2254	88 12 50	2239
	α Aquilæ	W.	45 39 10	4333	46 45 32	4196	47 54 2	4071	49 4 32	3955
	MARS	W.	38 59 0	2471	40 40 54	2453	42 23 14	2433	44 6 1	2416
	JUPITER	E.	37 23 2	2362	35 38 33	2346	33 53 41	2331	32 8 26	2315
	SUN	E.	61 25 23	2591	59 46 16	2574	58 6 45	2556	56 26 49	2539
23	α Aquilæ	W.	55 23 16	3506	56 43 34	3435	58 5 11	3371	59 28 1	3310
	MARS	W	52 46 8	2332	54 31 21	2316	56 16 57	2302	58 2 54	2287
	SUN	E.	48 1 20	2457	46 19 6	2442	44 36 31	2427	42 53 35	2413
24	MARS	W.	66 57 46	2223	68 45 40	2212	70 33 50	2201	72 22 16	2192
	α Aquilæ	W.	66 38 7	3073	68 6 50	3035	69 36 19	3002	71 6 29	2971
	SUN	E.	34 14 4	2350	32 29 17	2339	30 44 14	2328	28 58 56	2319
27	SUN	W.	8 22 56	2315	10 8 34	2317	11 54 8	2322	13 39 35	2329
	Pollux	E.	65 52 3	2010	63 58 45	2017	62 5 38	2026	60 12 44	2035
	Regulus	E.	102 17 17	2022	100 24 17	2030	98 31 29	2038	96 38 54	2046
28	SUN	W.	22 23 42	2382	24 7 42	2394	25 51 24	2409	27 34 46	2424
	Pollux	E.	50 52 5	2090	49 0 51	2103	47 9 56	2116	45 19 22	2130
	Regulus	E.	87 19 43	2101	85 28 45	2114	83 38 7	2127	81 47 49	2141
29	SUN	W.	36 6 11	2504	37 47 19	2522	39 28 2	2540	41 8 20	2558
	Pollux	E.	36 12 10	2209	34 23 56	2227	32 36 8	2245	30 48 47	2262
	Regulus	E.	72 41 53	2218	70 53 53	2235	69 6 18	2253	67 19 9	2270
	SATURN	E.	98 8 3	2192	96 19 23	2208	94 31 7	2225	92 43 17	2242
30	SUN	W.	49 23 25	2654	51 1 7	2673	52 38 23	2693	54 15 12	2713
	Aldebaran	W.	23 24 2	2566	25 3 44	2557	26 43 38	2554	28 23 36	2554
	Regulus	E.	58 30 2	2363	56 45 34	2382	55 1 34	2402	53 18 2	2422
	SATURN	E.	83 50 34	2332	82 5 21	2350	80 20 35	2369	78 36 16	2387

GREENWICH MEAN TIME.

LUNAR DISTANCES.

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18	α Pegasi	E.	70° 37′ 20″	3172	69° 10′ 37″	3168	67° 43′ 49″	3164	66° 16′ 57″	3161
	Jupiter	E.	83 31 44	2815	81 57 35	2801	80 23 9	2787	78 48 24	2773
	Sun	E.	105 0 53	3078	103 32 16	3062	102 3 20	3047	100 34 6	3032
19	Spica	W.	94 45 26	2628	96 23 43	2612	98 2 21	2596	99 41 21	2581
	Antares	W.	48 51 33	2624	50 29 56	2608	52 8 40	2592	53 47 46	2575
	Fomalhaut	E.	37 37 9	3133	36 9 39	3159	34 42 41	3192	33 16 22	3231
	α Pegasi	E.	59 2 12	3164	57 35 20	3169	56 8 34	3176	54 41 56	3185
	Jupiter	E.	70 49 50	2697	69 13 6	2681	67 36 1	2665	65 58 34	2649
	Sun	E.	93 3 2	2951	91 31 48	2935	90 0 13	2917	88 28 16	2900
20	Antares	W.	62 8 59	2492	63 50 24	2475	65 32 12	2458	67 14 25	2441
	α Pegasi	E.	47 32 28	3272	46 7 44	3302	44 43 35	3337	43 20 6	3378
	Jupiter	E.	57 45 46	2566	56 6 4	2548	54 25 58	2531	52 45 28	2515
	Sun	E.	80 42 53	2811	79 8 39	2792	77 34 1	2774	75 58 59	2756
21	Antares	W.	75 51 35	2355	77 36 15	2338	79 21 19	2321	81 6 48	2304
	Mars	W.	32 15 58	2550	33 56 2	2530	35 36 34	2510	37 17 33	2490
	Jupiter	E.	44 17 1	2429	42 34 7	2412	40 50 49	2395	39 7 7	2379
	Sun	E.	67 57 45	2663	66 20 16	2646	64 42 23	2627	63 4 5	2610
22	Antares	W.	90 0 20	2223	91 48 14	2206	93 36 32	2192	95 25 12	2176
	α Aquilæ	W.	50 16 56	3851	51 31 6	3753	52 46 57	3664	54 4 22	3582
	Mars	W.	45 49 13	2398	47 32 50	2381	49 16 52	2364	51 1 18	2348
	Jupiter	E.	30 22 48	2300	28 36 48	2286	26 50 28	2272	25 3 48	2260
	Sun	E.	54 46 30	2522	53 5 47	2505	51 24 41	2489	49 43 12	2472
23	α Aquilæ	W.	60 52 1	3254	62 17 6	3204	63 43 11	3156	65 10 13	3113
	Mars	W.	59 49 13	2272	61 35 53	2260	63 22 52	2247	65 10 10	2235
	Sun	E.	41 10 19	2399	39 26 43	2386	37 42 48	2373	35 58 35	2361
24	Mars	W.	74 10 56	2182	75 59 50	2174	77 48 56	2167	79 38 14	2160
	α Aquilæ	W.	72 37 18	2943	74 8 42	2919	75 40 37	2896	77 13 1	2877
	Sun	E.	27 13 24	2310	25 27 39	2302	23 41 43	2296	21 55 37	2289
27	Sun	W.	15 24 52	2337	17 9 57	2347	18 54 48	2358	20 39 23	2369
	Pollux	E.	58 20 4	2044	56 27 39	2055	54 35 30	2066	52 43 38	2078
	Regulus	E.	94 46 32	2056	92 54 25	2066	91 2 34	2077	89 11 0	2088
28	Sun	W.	29 17 47	2439	31 0 26	2454	32 42 44	2470	34 24 39	2487
	Pollux	E.	43 29 9	2145	41 39 19	2161	39 49 52	2176	38 0 49	2192
	Regulus	E.	79 57 52	2156	78 8 18	2170	76 19 6	2186	74 30 18	2202
29	Sun	W.	42 48 13	2577	44 27 40	2596	46 6 41	2615	47 45 16	2634
	Pollux	E.	29 1 52	2281	27 15 25	2300	25 29 25	2320	23 43 54	2339
	Regulus	E.	65 32 26	2289	63 46 10	2307	62 0 20	2325	60 14 57	2344
	Saturn	E.	90 55 52	2260	89 8 53	2277	87 22 20	2296	85 36 14	2313
30	Sun	W.	55 51 34	2734	57 27 29	2753	59 2 58	2774	60 38 0	2794
	Aldebaran	W.	30 3 34	2558	31 43 27	2563	33 23 13	2571	35 2 48	2580
	Regulus	E.	51 34 58	2442	49 52 23	2462	48 10 16	2482	46 28 37	2502
	Saturn	E.	76 52 23	2407	75 8 58	2425	73 25 59	2444	71 43 27	2463

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
SUN.	1	2 36 25.18	9.561	N.15 18 19.2	+44.92	15 54.10	66.12	3 4.28	0.294
Mon.	2	2 40 14.90	9.583	15 36 9.7	44.28	15 53.87	66.20	3 11.09	0.272
Tues.	3	2 44 5.16	9.605	15 53 44.6	43.63	15 53.64	66.28	3 17.37	0.250
Wed.	4	2 47 55.95	9.627	16 11 3.6	+42.96	15 53.42	66.36	3 23.12	0.228
Thur.	5	2 51 47.28	9.650	16 28 6.4	42.28	15 53.20	66.44	3 28.34	0.205
Frid.	6	2 55 39.16	9.673	16 44 52.8	41.58	15 52.98	66.52	3 33.01	0.182
Sat.	7	2 59 31.60	9.697	17 1 22.4	+40.87	15 52.76	66.60	3 37.12	0.159
SUN.	8	3 3 24.59	9.720	17 17 34.8	40.15	15 52.55	66.69	3 40.67	0.136
Mon.	9	3 7 18.14	9.743	17 33 29.9	39.43	15 52.34	66.77	3 43.67	0.113
Tues.	10	3 11 12.26	9.767	17 49 7.4	+38.69	15 52.13	66.85	3 46.10	0.089
Wed.	11	3 15 6.95	9.791	18 4 27.0	37.94	15 51.92	66.93	3 47.96	0.065
Thur.	12	3 19 2.22	9.815	18 19 28.5	37.18	15 51.71	67.02	3 49.24	0.041
Frid.	13	3 22 58.06	9.840	18 34 11.6	+36.40	15 51 50	67.10	3 49.95	0.016
Sat.	14	3 26 54.49	9.864	18 48 36.0	35.62	15 51.30	67.18	3 50.08	0.009
SUN.	15	3 30 51.50	9.888	19 2 41.4	34.83	15 51.10	67.26	3 49.63	0.032
Mon.	16	3 34 49.09	9.912	19 16 27.6	+34.02	15 50.90	67.34	3 48.59	0.056
Tues.	17	3 38 47.26	9.936	19 29 54.3	33.20	15 50.70	67.42	3 46.97	0.080
Wed.	18	3 42 46.01	9.959	19 43 1.3	32.37	15 50.51	67.50	3 44.79	0.103
Thur.	19	3 46 45.33	9.983	19 55 48.3	+31.53	15 50.32	67.58	3 42.05	0.127
Frid.	20	3 50 45.21	10.006	20 8 15.1	30.68	15 50.13	67.65	3 38.74	0.150
Sat.	21	3 54 45.65	10.029	20 20 21.3	29.81	15 49.95	67.73	3 34.86	0.173
SUN.	22	3 58 46.64	10.053	20 32 6.7	+28.94	15 49.77	67.80	3 30.43	0.196
Mon.	23	4 2 48.17	10.075	20 43 31.1	28.06	15 49.59	67.88	3 25.47	0.218
Tues.	24	4 6 50.23	10.097	20 54 34.2	27.17	15 49.42	67.95	3 19.99	0.240
Wed.	25	4 10 52.80	10.118	21 5 15.7	+26.27	15 49.26	68.02	3 14.00	0.261
Thur.	26	4 14 55.86	10.138	21 15 35.5	25.36	15 49.10	68.09	3 7.51	0.281
Frid.	27	4 18 59.39	10.157	21 25 33.2	24.43	15 48.95	68.16	3 0.55	0.300
Sat.	28	4 23 3.39	10.176	21 35 8.6	+23.50	15 48.80	68.22	2 53.13	0.319
SUN.	29	4 27 7.83	10.194	21 44 21.6	22.56	15 48.66	68.28	2 45.27	0.337
Mon.	30	4 31 12.70	10.211	21 53 11.9	21.61	15 48.52	68.34	2 36.98	0.354
Tues.	31	4 35 17.97	10.228	22 1 39.3	20.65	15 48.38	68.40	2 28.28	0.371
Wed.	32	4 39 23.64	10.244	N.22 9 43.6	+19.69	15 48.25	68.45	2 19.19	0.387

NOTE.—The mean time of semidiameter passing may be found by subtracting 0s.18 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

		THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
Day of the Week.	Day of the Month.	Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
SUN.	1	2 36 25.67	9.562	N. 15 18 21.5	+44.92	3 4.30	0.294	2 39 29.97
Mon.	2	2 40 15.41	9.584	15 36 12.0	44.28	3 11.11	0.272	2 43 26.52
Tues.	3	2 44 5.68	9.606	15 53 46.9	43.63	3 17.39	0.250	2 47 23.08
Wed.	4	2 47 56.49	9.628	16 11 6.0	+42.96	3 23.14	0.228	2 51 19.63
Thur.	5	2 51 47.84	9.651	16 28 8.9	42.28	3 28.35	0.205	2 55 16.19
Frid.	6	2 55 39.73	9.674	16 44 55.2	41.58	3 33.01	0.182	2 59 12.74
Sat.	7	2 59 32.18	9.697	17 1 24.8	+40.87	3 37.12	0.159	3 3 9.30
SUN.	8	3 3 25.18	9.720	17 17 37.3	40.15	3 40.68	0.136	3 7 5.86
Mon.	9	3 7 18.74	9.743	17 33 32.4	39.43	3 43.68	0.113	3 11 2.42
Tues.	10	3 11 12.87	9.767	17 49 9.9	+38.69	3 46.11	0.089	3 14 58.97
Wed.	11	3 15 7.57	9.791	18 4 29.5	37.94	3 47.96	0.065	3 18 55.53
Thur.	12	3 19 2.84	9.815	18 19 31.0	37.18	3 49.24	0.041	3 22 52.08
Frid.	13	3 22 58.69	9.840	18 34 14.0	+36.40	3 49.95	0.016	3 26 48.64
Sat.	14	3 26 55.12	9.864	18 48 38.3	35.62	3 50.08	0.009	3 30 45.20
SUN.	15	3 30 52.13	9.888	19 2 43.6	34.83	3 49.63	0.032	3 34 41.76
Mon.	16	3 34 49.72	9.912	19 16 29.8	+34.02	3 48.59	0.056	3 38 38.31
Tues.	17	3 38 47.89	9.936	19 29 56.5	33.20	3 46.98	0.080	3 42 34.87
Wed.	18	3 42 46.63	9.959	19 43 3.4	32.37	3 44.79	0.103	3 46 31.42
Thur.	19	3 46 45.94	9.983	19 55 50.3	+31.53	3 42.04	0.127	3 50 27.98
Frid.	20	3 50 45.82	10.006	20 8 17.0	30.68	3 38.73	0.150	3 54 24.54
Sat.	21	3 54 46.25	10.029	20 20 23.1	29.81	3 34.85	0.173	3 58 21.10
SUN.	22	3 58 47.23	10.052	20 32 8.4	+28.94	3 30.42	0.196	4 2 17.65
Mon.	23	4 2 48.75	10.074	20 43 32.7	28.06	3 25.46	0.218	4 6 14 21
Tues.	24	4 6 50.79	10.096	20 54 35.7	27.17	3 19.98	0.240	4 10 10.77
Wed.	25	4 10 53.34	10.117	21 5 17.1	+26.27	3 13.99	0.261	4 14 7.33
Thur.	26	4 14 56 38	10.137	21 15 36.8	25.36	3 7.50	0.281	4 18 3 88
Frid.	27	4 18 59.90	10.156	21 25 34.4	24.43	3 0.54	0.300	4 22 0.44
Sat.	28	4 23 3.88	10.175	21 35 9.7	+23.50	2 53.12	0.319	4 25 57.00
SUN.	29	4 27 8.30	10.193	21 44 22.6	22.56	2 45.26	0.337	4 29 53.56
Mon.	30	4 31 13.15	10.210	21 53 12.8	21.61	2 36.97	0.354	4 33 50.12
Tues.	31	4 35 18.40	10.227	22 1 40.1	20.65	2 28.27	0.371	4 37 46.68
Wed.	32	4 39 24.05	10.243	N. 22 9 44.4	+19.69	2 19.18	0.387	4 41 43.23

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

Diff. for 1 Hour,
+9ˢ.8565.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	Diff. for 1 Hour.	LATITUDE	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	122	41 32 58.8	32 56.0	145.45	+ 0.58	0.0035803	+43.8	21 17 0.26
2	123	42 31 8.6	31 5.7	145.36	0.66	0.0036845	43.2	21 13 4.35
3	124	43 29 16.4	29 13.3	145.28	0.70	0.0037874	42.7	21 9 8.43
4	125	44 27 22.1	27 18.9	145.20	+ 0.72	0.0038891	+42.2	21 5 12.52
5	126	45 25 25.9	25 22.5	145.12	0.71	0.0039897	41.8	21 1 16.61
6	127	46 23 27.8	23 24.3	145.04	0.66	0.0040893	41.4	20 57 20.70
7	128	47 21 27.9	21 24.3	144.97	+ 0.59	0.0041879	+41.0	20 53 24.80
8	129	48 19 26.1	19 22.3	144.89	0.49	0.0042856	40.6	20 49 28.89
9	130	49 17 22.5	17 18.5	144.82	0.37	0.0043825	40.2	20 45 32.98
10	131	50 15 17.2	15 13.1	144.75	+ 0.25	0.0044787	+39.9	20 41 37.07
11	132	51 13 10.4	13 6.1	144.69	+ 0.12	0.0045741	39.5	20 37 41.16
12	133	52 11 2.0	10 57.5	144.62	− 0.01	0.0046687	39.2	20 33 45.25
13	134	53 8 52.1	8 47.5	144.56	− 0.13	0.0047625	+38.8	20 29 49.34
14	135	54 6 40.9	6 36.1	144.50	0.24	0.0048555	38.5	20 25 53.43
15	136	55 4 28.4	4 23.4	144.45	0.33	0.0049476	38.1	20 21 57.51
16	137	56 2 14.7	2 9.6	144.40	− 0.39	0.0050386	+37.7	20 18 1.60
17	138	56 59 59.8	59 54.6	144.35	0.42	0.0051284	37.2	20 14 5.69
18	139	57 57 43.8	57 38.4	144.31	0.42	0.0052169	36.6	20 10 9.78
19	140	58 55 26.7	55 21.1	144.27	− 0.39	0.0053040	+36.0	20 6 13.87
20	141	59 53 8.6	53 2.8	144.23	0.33	0.0053896	35.3	20 2 17.96
21	142	60 50 49.5	50 43.5	144.19	0.25	0.0054734	34.5	19 58 22.05
22	143	61 48 29.3	48 23.2	144.14	− 0.14	0.0055552	+33.7	19 54 26.14
23	144	62 46 8.1	46 1.8	144.10	− 0.02	0.0056350	32.8	19 50 30.22
24	145	63 43 45.8	43 39.3	144.05	+ 0.11	0.0057126	31.9	19 46 34.31
25	146	64 41 22.4	41 15.7	144.01	+ 0.25	0.0057880	+31.0	19 42 38.40
26	147	65 38 57.9	38 51.0	143.96	0.38	0.0058612	30.0	19 38 42.49
27	148	66 36 32.2	36 25.1	143.91	0.50	0.0059321	29.0	19 34 46.57
28	149	67 34 5.3	33 58.1	143.86	+ 0.60	0.0060005	+28.0	19 30 50.66
29	150	68 31 37.3	31 29.9	143.81	0.68	0.0060666	27.1	19 26 54.75
30	151	69 29 8.1	29 0.5	143.76	0.74	0.0061306	26.2	19 22 58.84
31	152	70 26 37.6	26 29.8	143.71	0.76	0.0061925	25.3	19 19 2.93
32	153	71 24 5.8	23 57.9	143.65	+ 0.75	0.0062523	+24.5	19 15 7.02

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 1ᵈ.0.

Diff. for 1 Hour,
—9ˢ.8296.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 49.7	15 42.0	57 59.0	−2.39	57 30.5	−2.34	4 32.6	2.43	4.6
2	15 34.5	15 27.3	57 2.9	2.25	56 36.6	2.13	5 29.2	2.26	5.6
3	15 20.6	15 14.3	56 11.9	1.99	55 49.1	1.82	6 21.3	2.08	6.6
4	15 8.7	15 3.7	55 28.3	−1.64	55 9.8	−1.46	7 8.9	1.91	7.6
5	14 59.2	14 55.4	54 53.5	1.27	54 39.4	1.08	7 52.8	1.77	8.6
6	14 52.2	14 49.6	54 27.7	0.89	54 18.1	0.71	8 34.0	1.68	9.6
7	14 47.6	14 46.1	54 10.7	−0.54	54 5.4	−0.37	9 13.7	1.64	10.6
8	14 45.2	14 44.8	54 2.0	−0.21	54 0.4	−0.07	9 52.8	1.64	11.6
9	14 44.8	14 45.3	54 0.5	+0.08	54 2.2	+0.21	10 32.6	1.69	12.6
10	14 46.1	14 47.4	54 5.4	+0.33	54 10.0	+0.44	11 13.8	1.77	13.6
11	14 49.0	14 50.9	54 15.8	0.54	54 22.8	0.63	11 57.5	1.88	14.6
12	14 53.1	14 55.6	54 30.9	0.73	54 40.2	0.82	12 44.2	2.01	15.6
13	14 58.4	15 1.5	54 50.5	+0.90	55 1.8	+0.99	13 34.1	2.14	16.6
14	15 4.8	15 8.5	55 14.1	1.08	55 27.5	1.16	14 27.0	2.24	17.6
15	15 12.4	15 16.6	55 41.8	1.25	55 57.3	1.34	15 21.6	2.28	18.6
16	15 21.1	15 25.8	56 13.8	+1.42	56 31.2	+1.50	16 16.7	2.28	19.6
17	15 30.9	15 36.2	56 49.7	1.59	57 9.2	1.66	17 10.8	2.22	20.6
18	15 41.7	15 47.4	57 29.4	1.71	57 50.3	1.77	18 3.0	2.16	21.6
19	15 53.2	15 59.1	58 11.7	+1.79	58 33.2	+1.80	18 53.7	2.08	22.6
20	16 4.9	16 10.6	58 54.7	1.77	59 15.6	1.70	19 43.0	2.05	23.6
21	16 16.0	16 21.0	59 35.5	1.60	59 53.9	1.46	20 32.2	2.07	24.6
22	16 25.5	16 29.3	60 10.3	+1.27	60 24.3	+1.04	21 22.5	2.15	25.6
23	16 32.3	16 34.8	60 35.2	0.77	60 42.6	+0.47	22 15.3	2.27	26.6
24	16 35.3	16 35.2	60 46.3	+0.14	60 45.8	−0.22	23 11.4	2.41	27.6
25	16 33.9	16 31.5	60 41.1	−0.57	60 32.3	−0.90	δ		28.6
26	16 28.0	16 23.5	60 19.5	1.23	60 3.0	1.51	0 11.1	2.54	0.3
27	16 18.1	16 12.0	59 43.2	1.76	59 20.8	1.96	1 13.3	2.60	1.3
28	16 5.3	15 58.3	58 56.3	−2.11	58 30.3	−2.21	2 15.8	2.56	2.3
29	15 50.9	15 43.6	58 3.4	2.25	57 36.3	2.25	3 16.0	2.41	3.3
30	15 36.2	15 29.2	57 9.4	2.21	56 43.4	2.12	4 11.6	2.22	4.3
31	15 22.4	15 16.1	56 18.6	2.00	55 55.4	1.86	5 2.4	2.02	5.3
32	15 10.3	15 5.1	55 34.1	−1.69	55 14.9	−1.51	5 48.6	1.85	6.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 1.					**TUESDAY 3.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 1 23.71	2.5342	N.27 9 20.9	1.868	0	8 55 45.96	2.2142	N.22 48 57.2	8.464
1	7 3 55.61	2.5292	27 7 23.8	2.036	1	8 57 58.60	2.2070	22 40 26.2	8.568
2	7 6 27.21	2.5240	27 5 16.6	2.202	2	9 0 10.80	2.1998	22 31 49.0	8.672
3	7 8 58.49	2.5186	27 2 59.5	2.367	3	9 2 22.57	2.1926	22 23 5.6	8.773
4	7 11 29.44	2.5131	27 0 32.5	2.532	4	9 4 33.91	2.1855	22 14 16.2	8.873
5	7 14 0.06	2.5076	26 57 55.7	2.695	5	9 6 44.83	2.1784	22 5 20.8	8.972
6	7 16 30.35	2.5020	26 55 9.1	2.857	6	9 8 55.32	2.1713	21 56 19.6	9.069
7	7 19 0.30	2.4962	26 52 12.8	3.017	7	9 11 5.39	2.1642	21 47 12.6	9.165
8	7 21 29.90	2.4903	26 49 7.0	3.177	8	9 13 15.03	2.1572	21 37 59.8	9.260
9	7 23 59.14	2.4844	26 45 51.6	3.336	9	9 15 24.25	2.1502	21 28 41.4	9.353
10	7 26 28.03	2.4785	26 42 26.7	3.492	10	9 17 33.05	2.1432	21 19 17.4	9.445
11	7 28 56.56	2.4724	26 38 52.5	3.647	11	9 19 41.44	2.1363	21 9 48.0	9.535
12	7 31 24.72	2.4662	26 35 9.0	3.802	12	9 21 49.41	2.1294	21 0 13.2	9.625
13	7 33 52.51	2.4600	26 31 16.2	3.956	13	9 23 56.97	2.1226	20 50 33.0	9.713
14	7 36 19.92	2.4537	26 27 14.3	4.107	14	9 26 4.12	2.1158	20 40 47.6	9.800
15	7 38 46.95	2.4472	26 23 3.3	4.258	15	9 28 10.86	2.1090	20 30 57.0	9.887
16	7 41 13.59	2.4407	26 18 43.3	4.408	16	9 30 17.20	2.1022	20 21 1.2	9.972
17	7 43 39.84	2.4342	26 14 14.3	4.557	17	9 32 23.13	2.0955	20 11 0.4	10.054
18	7 46 5.70	2.4277	26 9 36.5	4.703	18	9 34 28.66	2.0889	20 0 54.7	10.136
19	7 48 31.16	2.4210	26 4 49.9	4.848	19	9 36 33.80	2.0823	19 50 44.1	10.217
20	7 50 56.22	2.4143	25 59 54.7	4.992	20	9 38 38.54	2.0757	19 40 28.6	10.297
21	7 53 20.88	2.4076	25 54 50.9	5.135	21	9 40 42.89	2.0692	19 30 8.4	10.376
22	7 55 45.13	2.4007	25 49 38.5	5.277	22	9 42 46.85	2.0628	19 19 43.5	10.453
23	7 58 8.97	2.3938	N.25 44 17.7	5.417	23	9 44 50.43	2.0564	N.19 9 14.0	10.529
	MONDAY 2.					**WEDNESDAY 4.**			
0	8 0 32.39	2.3869	N.25 38 48.5	5.555	0	9 46 53.62	2.0500	N.18 58 40.0	10.604
1	8 2 55.40	2.3800	25 33 11.1	5.692	1	9 48 56.43	2.0438	18 48 1.5	10.678
2	8 5 17.99	2.3730	25 27 25.4	5.829	2	9 50 58.87	2.0376	18 37 18.6	10.751
3	8 7 40.16	2.3659	25 21 31.6	5.964	3	9 53 0.94	2.0314	18 26 31.4	10.822
4	8 10 1.90	2.3588	25 15 29.7	6.097	4	9 55 2.63	2.0252	18 15 40.0	10.892
5	8 12 23.22	2.3517	25 9 20.0	6.227	5	9 57 3.96	2.0192	18 4 44.3	10.962
6	8 14 44.11	2.3446	25 3 2.5	6.357	6	9 59 4.93	2.0132	17 53 44.5	11.030
7	8 17 4.57	2.3374	24 56 37.2	6.487	7	10 1 5.54	2.0072	17 42 40.7	11.097
8	8 19 24.60	2.3303	24 50 4.1	6.615	8	10 3 5.79	2.0012	17 31 32.9	11.163
9	8 21 44.20	2.3231	24 43 23.4	6.741	9	10 5 5.69	1.9954	17 20 21.1	11.229
10	8 24 3.37	2.3158	24 36 35.2	6.866	10	10 7 5.24	1.9897	17 9 5.4	11.292
11	8 26 22.10	2.3086	24 29 39.5	6.989	11	10 9 4.45	1.9840	16 57 46.0	11.354
12	8 28 40.40	2.3013	24 22 36.5	7.111	12	10 11 3.32	1.9783	16 46 22.9	11.416
13	8 30 58.26	2.2941	24 15 26.2	7.232	13	10 13 1.85	1.9727	16 34 56.1	11.477
14	8 33 15.69	2.2868	24 8 8.7	7.350	14	10 15 0.05	1.9672	16 23 25.6	11.537
15	8 35 32.68	2.2795	24 0 44.2	7.467	15	10 16 57.92	1.9617	16 11 51.6	11.596
16	8 37 49.23	2.2722	23 53 12.6	7.584	16	10 18 55.46	1.9563	16 0 14.1	11.653
17	8 40 5.35	2.2650	23 45 34.1	7.699	17	10 20 52.68	1.9510	15 48 33.2	11.709
18	8 42 21.03	2.2577	23 37 48.7	7.813	18	10 22 49.58	1.9457	15 36 49.0	11.764
19	8 44 36.27	2.2504	23 29 56.5	7.925	19	10 24 46.16	1.9405	15 25 1.5	11.819
20	8 46 51.08	2.2432	23 21 57.7	8.035	20	10 26 42.44	1.9354	15 13 10.7	11.873
21	8 49 5.45	2.2359	23 13 52.3	8.145	21	10 28 38.41	1.9303	15 1 16.7	11.926
22	8 51 19.39	2.2287	23 5 40.3	8.253	22	10 30 34.08	1.9253	14 49 19.6	11.978
23	8 53 32.89	2.2214	22 57 21.9	8.359	23	10 32 29.45	1.9204	14 37 19.4	12.029
24	8 55 45.96	2.2142	N.22 48 57.2	8.464	24	10 34 24.53	1.9156	N.14 25 16.1	12.079

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 5.			
	h m s	s	° ′ ″	″
0	10 34 24.53	1.9156	N.14 25 16.1	12.079
1	10 36 19.32	1.9108	14 13 9.9	12.127
2	10 38 13.82	1.9060	14 1 0.8	12.175
3	10 40 8.04	1.9013	13 48 48.9	12.222
4	10 42 1.98	1.8967	13 36 34.2	12.268
5	10 43 55.65	1.8922	13 24 16.7	12.313
6	10 45 49.05	1.8877	13 11 56.6	12.357
7	10 47 42.18	1.8834	12 59 33.8	12.401
8	10 49 35.06	1.8792	12 47 8.5	12.444
9	10 51 27.68	1.8749	12 34 40.6	12.486
10	10 53 20.05	1.8707	12 22 10.2	12.526
11	10 55 12.17	1.8667	12 9 37.5	12.565
12	10 57 4.05	1.8627	11 57 2.4	12.604
13	10 58 55.69	1.8587	11 44 25.0	12.642
14	11 0 47.09	1.8548	11 31 45.3	12.680
15	11 2 38.26	1.8510	11 19 3.4	12.717
16	11 4 29.21	1.8472	11 6 19.3	12.752
17	11 6 19.93	1.8435	10 53 33.1	12.787
18	11 8 10.43	1.8399	10 40 44.9	12.820
19	11 10 0.72	1.8364	10 27 54.7	12.853
20	11 11 50.80	1.8330	10 15 2.5	12.886
21	11 13 40.68	1.8296	10 2 8.3	12.918
22	11 15 30.35	1.8263	9 49 12.3	12.949
23	11 17 19.83	1.8231	N. 9 36 14.4	12.979
	FRIDAY 6.			
0	11 19 9.12	1.8199	N. 9 23 14.8	13.006
1	11 20 58.22	1.8168	9 10 13.5	13.036
2	11 22 47.14	1.8137	8 57 10.5	13.064
3	11 24 35.87	1.8107	8 44 5.8	13.092
4	11 26 24.43	1.8079	8 30 59.5	13.118
5	11 28 12.82	1.8052	8 17 51.7	13.143
6	11 30 1.05	1.8025	8 4 42.4	13.168
7	11 31 49.12	1.7998	7 51 31.6	13.191
8	11 33 37.03	1.7972	7 38 19.5	13.214
9	11 35 24.78	1.7946	7 25 6.0	13.236
10	11 37 12.38	1.7922	7 11 51.2	13.258
11	11 38 59.84	1.7899	6 58 35.1	13.279
12	11 40 47.17	1.7877	6 45 17.7	13.299
13	11 42 34.36	1.7854	6 31 59.2	13.318
14	11 44 21.42	1.7832	6 18 39.6	13.337
15	11 46 8.34	1.7810	6 5 18.8	13.355
16	11 47 55.14	1.7791	5 51 57.0	13.372
17	11 49 41.83	1.7772	5 38 34.1	13.389
18	11 51 28.40	1.7753	5 25 10.3	13.404
19	11 53 14.86	1.7735	5 11 45.6	13.419
20	11 55 1.22	1.7717	4 58 20.0	13.434
21	11 56 47.47	1.7701	4 44 53.5	13.448
22	11 58 33.63	1.7685	4 31 26.2	13.461
23	12 0 19.69	1.7669	4 17 58.2	13.473
24	12 2 5.66	1.7655	N. 4 4 29.5	13.484

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
	SATURDAY 7.			
	h m s	s	° ′ ″	″
0	12 2 5.66	1.7655	N. 4 4 29.5	13.484
1	12 3 51.55	1.7642	3 51 0.1	13.495
2	12 5 37.36	1.7628	3 37 30.1	13.506
3	12 7 23.09	1.7616	3 23 59.4	13.516
4	12 9 8.75	1.7604	3 10 28.2	13.524
5	12 10 54.34	1.7593	2 56 56.5	13.532
6	12 12 39.87	1.7583	2 43 24.4	13.539
7	12 14 25.34	1.7574	2 29 51.8	13.546
8	12 16 10.76	1.7566	2 16 18.9	13.552
9	12 17 56.13	1.7557	2 2 45.6	13.557
10	12 19 41.45	1.7549	1 49 12.0	13.562
11	12 21 26.72	1.7542	1 35 38.2	13.566
12	12 23 11.95	1.7536	1 22 4.1	13.569
13	12 24 57.15	1.7531	1 8 29.9	13.572
14	12 26 42.32	1.7527	0 54 55.5	13.574
15	12 28 27.47	1.7522	0 41 21.0	13.576
16	12 30 12.59	1.7519	0 27 46.4	13.576
17	12 31 57.70	1.7516	0 14 11.9	13.575
18	12 33 42.79	1.7514	N. 0 0 37.4	13.575
19	12 35 27.87	1.7513	S. 0 12 57.1	13.573
20	12 37 12.95	1.7513	0 26 31.4	13.571
21	12 38 58.03	1.7513	0 40 5.6	13.568
22	12 40 43.11	1.7514	0 53 39.6	13.565
23	12 42 28.20	1.7515	S. 1 7 13.4	13.561
	SUNDAY 8.			
0	12 44 13.29	1.7517	S. 1 20 46.9	13.556
1	12 45 58.40	1.7520	1 34 20.1	13.550
2	12 47 43.53	1.7524	1 47 52.9	13.543
3	12 49 28.69	1.7529	2 1 25.3	13.536
4	12 51 13.88	1.7533	2 14 57.2	13.528
5	12 52 59.09	1.7538	2 28 28.7	13.521
6	12 54 44.33	1.7543	2 41 59.7	13.512
7	12 56 29.61	1.7551	2 55 30.1	13.501
8	12 58 14.94	1.7559	3 8 59.8	13.490
9	13 0 0.32	1.7567	3 22 28.9	13.479
10	13 1 45.75	1.7576	3 35 57.3	13.467
11	13 3 31.23	1.7585	3 49 25.0	13.455
12	13 5 16.77	1.7595	4 2 51.9	13.441
13	13 7 2.37	1.7606	4 16 17.9	13.427
14	13 8 48.04	1.7617	4 29 43.1	13.412
15	13 10 33.78	1.7630	4 43 7.4	13.397
16	13 12 19.60	1.7643	4 56 30.8	13.381
17	13 14 5.50	1.7656	5 9 53.1	13.364
18	13 15 51.47	1.7669	5 23 14.4	13.346
19	13 17 37.53	1.7685	5 36 34.6	13.327
20	13 19 23.69	1.7701	5 49 53.7	13.308
21	13 21 9.94	1.7716	6 3 11.6	13.288
22	13 22 56.28	1.7733	6 16 28.3	13.268
23	13 24 42.73	1.7750	6 29 43.8	13.247
24	13 26 29.28	1.7767	S. 6 42 58.0	13.225

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 26 29.28	1.7767	S. 6 42 58.0	13.225
1	13 28 15.94	1.7786	6 56 10.8	13.202
2	13 30 2.71	1.7805	7 9 22.2	13.178
3	13 31 49.60	1.7825	7 22 32.2	13.154
4	13 33 36.61	1.7846	7 35 40.7	13.129
5	13 35 23.75	1.7867	7 48 47.7	13.103
6	13 37 11.01	1.7888	8 1 53.1	13.077
7	13 38 58.40	1.7910	8 14 56.9	13.049
8	13 40 45.93	1.7933	8 27 59.0	13.021
9	13 42 33.60	1.7957	8 40 59.4	12.992
10	13 44 21.41	1.7981	8 53 58.0	12.962
11	13 46 9.37	1.8005	9 6 54.8	12.932
12	13 47 57.47	1.8030	9 19 49.8	12.901
13	13 49 45.73	1.8056	9 32 42.9	12.868
14	13 51 34.15	1.8083	9 45 34.0	12.835
15	13 53 22.73	1.8110	9 58 23.1	12.802
16	13 55 11.47	1.8138	10 11 10.2	12.767
17	13 57 0.38	1.8166	10 23 55.2	12.732
18	13 58 49.46	1.8195	10 36 38.0	12.695
19	14 0 38.72	1.8225	10 49 18.6	12.658
20	14 2 28.16	1.8254	11 1 57.0	12.621
21	14 4 17.77	1.8284	11 14 33.2	12.583
22	14 6 7.57	1.8316	11 27 7.0	12.543
23	14 7 57.56	1.8348	S. 11 39 38.4	12.503

TUESDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 9 47.75	1.8381	S. 11 52 7.4	12.462
1	14 11 38.13	1.8413	12 4 33.9	12.421
2	14 13 28.71	1.8446	12 16 57.9	12.377
3	14 15 19.48	1.8479	12 29 19.2	12.333
4	14 17 10.46	1.8514	12 41 37.9	12.289
5	14 19 1.65	1.8550	12 53 53.9	12.244
6	14 20 53.06	1.8586	13 6 7.2	12.198
7	14 22 44.68	1.8621	13 18 17.7	12.151
8	14 24 36.51	1.8657	13 30 25.3	12.103
9	14 26 28.56	1.8694	13 42 30.1	12.055
10	14 28 20.84	1.8732	13 54 31.9	12.004
11	14 30 13.35	1.8770	14 6 30.6	11.953
12	14 32 6.08	1.8808	14 18 26.3	11.902
13	14 33 59.05	1.8847	14 30 18.9	11.850
14	14 35 52.25	1.8887	14 42 8.3	11.797
15	14 37 45.69	1.8927	14 53 54.5	11.742
16	14 39 39.37	1.8968	15 5 37.4	11.687
17	14 41 33.30	1.9009	15 17 17.0	11.631
18	14 43 27.48	1.9051	15 28 53.2	11.574
19	14 45 21.91	1.9092	15 40 25.9	11.517
20	14 47 16.59	1.9134	15 51 55.2	11.458
21	14 49 11.52	1.9177	16 3 20.9	11.398
22	14 51 6.71	1.9220	16 14 43.0	11.337
23	14 53 2.16	1.9263	16 26 1.4	11.276
24	14 54 57.87	1.9307	S. 16 37 16.1	11.213

WEDNESDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 54 57.87	1.9307	S. 16 37 16.1	11.213
1	14 56 53.85	1.9352	16 48 27.0	11.150
2	14 58 50.10	1.9397	16 59 34.1	11.086
3	15 0 46.62	1.9442	17 10 37.3	11.020
4	15 2 43.41	1.9488	17 21 36.5	10.953
5	15 4 40.48	1.9534	17 32 31.7	10.886
6	15 6 37.82	1.9580	17 43 22.8	10.817
7	15 8 35.44	1.9627	17 54 9.8	10.748
8	15 10 33.35	1.9675	18 4 52.6	10.678
9	15 12 31.54	1.9722	18 15 31.2	10.607
10	15 14 30.01	1.9769	18 26 5.5	10.535
11	15 16 28.77	1.9817	18 36 35.4	10.461
12	15 18 27.82	1.9866	18 47 0.8	10.386
13	15 20 27.16	1.9914	18 57 21.7	10.311
14	15 22 26.79	1.9963	19 7 38.1	10.236
15	15 24 26.72	2.0013	19 17 50.0	10.159
16	15 26 26.95	2.0062	19 27 57.2	10.080
17	15 28 27.47	2.0112	19 37 59.6	10.000
18	15 30 28.29	2.0162	19 47 57.2	9.920
19	15 32 29.41	2.0212	19 57 50.0	9.839
20	15 34 30.84	2.0263	20 7 37.9	9.757
21	15 36 32.57	2.0313	20 17 20.8	9.673
22	15 38 34.60	2.0364	20 26 58.7	9.589
23	15 40 36.94	2.0415	S. 20 36 31.5	9.503

THURSDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 42 39.58	2.0466	S. 20 45 59.1	9.417
1	15 44 42.53	2.0517	20 55 21.5	9.330
2	15 46 45.79	2.0569	21 4 38.7	9.242
3	15 48 49.36	2.0621	21 13 50.5	9.152
4	15 50 53.24	2.0672	21 22 56.9	9.061
5	15 52 57.43	2.0723	21 31 57.8	8.969
6	15 55 1.92	2.0775	21 40 53.2	8.877
7	15 57 6.73	2.0827	21 49 43.0	8.783
8	15 59 11.85	2.0879	21 58 27.2	8.689
9	16 1 17.28	2.0932	22 7 5.7	8.593
10	16 3 23.03	2.0984	22 15 38.4	8.497
11	16 5 29.09	2.1036	22 24 5.3	8.399
12	16 7 35.46	2.1088	22 32 26.3	8.300
13	16 9 42.14	2.1140	22 40 41.3	8.200
14	16 11 49.14	2.1192	22 48 50.3	8.100
15	16 13 56.45	2.1244	22 56 53.3	7.998
16	16 16 4.07	2.1296	23 4 50.1	7.895
17	16 18 12.00	2.1347	23 12 40.7	7.792
18	16 20 20.23	2.1398	23 20 25.1	7.687
19	16 22 28.77	2.1450	23 28 3.1	7.580
20	16 24 37.63	2.1502	23 35 34.7	7.473
21	16 26 46.80	2.1553	23 42 59.9	7.366
22	16 28 56.27	2.1604	23 50 18.6	7.257
23	16 31 6.05	2.1655	23 57 30.7	7.147
24	16 33 16.13	2.1705	S. 24 4 36.2	7.036

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 33 16.13	2.1705	S.24 4 36.2	7.036
1	16 35 26.51	2.1756	24 11 35.0	6.924
2	16 37 37.20	2.1807	24 18 27.1	6.811
3	16 39 48.19	2.1857	24 25 12.3	6.697
4	16 41 59.48	2.1906	24 31 50.7	6.582
5	16 44 11.06	2.1955	24 38 22.2	6.467
6	16 46 22.94	2.2004	24 44 46.7	6.350
7	16 48 35.11	2.2053	24 51 4.2	6.232
8	16 50 47.57	2.2102	24 57 14.6	6.113
9	16 53 0.33	2.2150	25 3 17.8	5.993
10	16 55 13.37	2.2197	25 9 13.8	5.873
11	16 57 26.69	2.2244	25 15 2.6	5.752
12	16 59 40.30	2.2291	25 20 44.1	5.630
13	17 1 54.18	2.2337	25 26 18.2	5.506
14	17 4 8.34	2.2383	25 31 44.8	5.382
15	17 6 22.78	2.2429	25 37 4.0	5.257
16	17 8 37.49	2.2473	25 42 15.7	5.132
17	17 10 52.46	2.2517	25 47 19.8	5.004
18	17 13 7.70	2.2561	25 52 16.2	4.876
19	17 15 23.20	2.2605	25 57 4.9	4.748
20	17 17 38.96	2.2648	26 1 45.9	4.619
21	17 19 54.97	2.2690	26 6 19.2	4.489
22	17 22 11.24	2.2732	26 10 44.6	4.357
23	17 24 27.75	2.2773	S.26 15 2.1	4.225

SATURDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 26 44.51	2.2813	S.26 19 11.6	4.093
1	17 29 1.51	2.2853	26 23 13.2	3.960
2	17 31 18.74	2.2892	26 27 6.8	3.825
3	17 33 36.21	2.2931	26 30 52.2	3.689
4	17 35 53.91	2.2968	26 34 29.5	3.554
5	17 38 11.83	2.3004	26 37 58.7	3.418
6	17 40 29.96	2.3040	26 41 19.7	3.281
7	17 42 48.31	2.3076	26 44 32.4	3.143
8	17 45 6.87	2.3111	26 47 36.8	3.004
9	17 47 25.64	2.3145	26 50 32.9	2.865
10	17 49 44.61	2.3178	26 53 20.6	2.725
11	17 52 3.78	2.3211	26 55 59.9	2.585
12	17 54 23.14	2.3242	26 58 30.8	2.444
13	17 56 42.69	2.3273	27 0 53.2	2.302
14	17 59 2.42	2.3303	27 3 7.0	2.159
15	18 1 22.32	2.3332	27 5 12.3	2.016
16	18 3 42.40	2.3361	27 7 9.0	1.873
17	18 6 2.65	2.3388	27 8 57.1	1.729
18	18 8 23.05	2.3414	27 10 36.5	1.584
19	18 10 43.61	2.3440	27 12 7.2	1.439
20	18 13 4.33	2.3465	27 13 29.2	1.293
21	18 15 25.19	2.3488	27 14 42.4	1.147
22	18 17 46.19	2.3511	27 15 46.9	1.001
23	18 20 7.32	2.3532	27 16 42.6	0.854
24	18 22 28.58	2.3553	S.27 17 29.4	0.707

SUNDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	18 22 28.58	2.3553	S.27 17 29.4	0.707
1	18 24 49.96	2.3574	27 18 7.4	0.559
2	18 27 11.47	2.3594	27 18 36.5	0.411
3	18 29 33.09	2.3612	27 18 56.7	0.262
4	18 31 54.82	2.3629	27 19 8.0	− 0.114
5	18 34 16.64	2.3645	27 19 10.4	+ 0.035
6	18 36 38.56	2.3661	27 19 3.8	0.185
7	18 39 0.57	2.3676	27 18 48.2	0.336
8	18 41 22.67	2.3689	27 18 23.6	0.484
9	18 43 44.84	2.3701	27 17 50.1	0.634
10	18 46 7.08	2.3713	27 17 7.5	0.785
11	18 48 29.39	2.3724	27 16 15.9	0.936
12	18 50 51.77	2.3734	27 15 15.2	1.087
13	18 53 14.20	2.3742	27 14 5.5	1.237
14	18 55 36.68	2.3750	27 12 46.7	1.388
15	18 57 59.20	2.3757	27 11 18.9	1.539
16	19 0 21.76	2.3762	27 9 42.0	1.691
17	19 2 44.35	2.3767	27 7 55.9	1.843
18	19 5 6.96	2.3770	27 6 0.8	1.994
19	19 7 29.59	2.3773	27 3 56.6	2.146
20	19 9 52.24	2.3776	27 1 43.3	2.297
21	19 12 14.90	2.3777	26 59 20.9	2.449
22	19 14 37.56	2.3777	26 56 49.4	2.601
23	19 17 0.22	2.3777	S.26 54 8.8	2.752

MONDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	19 19 22.88	2.3775	S.26 51 19.2	2.903
1	19 21 45.52	2.3772	26 48 20.5	3.054
2	19 24 8.14	2.3768	26 45 12.7	3.206
3	19 26 30.73	2.3763	26 41 55.8	3.357
4	19 28 53.29	2.3758	26 38 29.8	3.508
5	19 31 15.82	2.3753	26 34 54.8	3.658
6	19 33 38.32	2.3746	26 31 10.8	3.808
7	19 36 0.77	2.3737	26 27 17.8	3.959
8	19 38 23.16	2.3728	26 23 15.7	4.110
9	19 40 45.50	2.3718	26 19 4.6	4.260
10	19 43 7.78	2.3708	26 14 44.5	4.409
11	19 45 29.99	2.3697	26 10 15.5	4.558
12	19 47 52.14	2.3685	26 5 37.6	4.707
13	19 50 14.21	2.3672	26 0 50.7	4.856
14	19 52 36.20	2.3658	25 55 54.9	5.004
15	19 54 58.11	2.3644	25 50 50.2	5.152
16	19 57 19.93	2.3628	25 45 36.6	5.300
17	19 59 41.65	2.3612	25 40 14.2	5.448
18	20 2 3.27	2.3595	25 34 42.9	5.595
19	20 4 24.79	2.3578	25 29 2.8	5.741
20	20 6 46.21	2.3561	25 23 14.0	5.888
21	20 9 7.52	2.3542	25 17 16.5	6.032
22	20 11 28.71	2.3523	25 11 10.2	6.177
23	20 13 49.79	2.3503	25 4 55.2	6.322
24	20 16 10.75	2.3489	S.24 58 31.6	6.466

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 16 10.75	2.3482	S.24 58 31.6	6.466
1	20 18 31.58	2.3461	24 51 59.3	6.609
2	20 20 52.28	2.3439	24 45 18.5	6.752
3	20 23 12.85	2.3417	24 38 29.1	6.895
4	20 25 33.28	2.3394	24 31 31.1	7.037
5	20 27 53.58	2.3371	24 24 24.7	7.178
6	20 30 13.74	2.3347	24 17 9.8	7.318
7	20 32 33.75	2.3322	24 9 46.5	7.458
8	20 34 53.61	2.3298	24 2 14.8	7.597
9	20 37 13.33	2.3273	23 54 34.8	7.736
10	20 39 32.89	2.3248	23 46 46.5	7.874
11	20 41 52.30	2.3222	23 38 49.9	8.012
12	20 44 11.55	2.3195	23 30 45.1	8.148
13	20 46 30.64	2.3168	23 22 32.1	8.284
14	20 48 49.57	2.3141	23 14 11.0	8.419
15	20 51 8.33	2.3113	23 5 41.8	8.554
16	20 53 26.92	2.3085	22 57 4.5	8.688
17	20 55 45.35	2.3057	22 48 19.2	8.821
18	20 58 3.61	2.3029	22 39 26.0	8.953
19	21 0 21.70	2.3000	22 30 24.9	9.084
20	21 2 39.61	2.2971	22 21 15.9	9.215
21	21 4 57.35	2.2942	22 11 59.1	9.345
22	21 7 14.92	2.2913	22 2 34.5	9.474
23	21 9 32.31	2.2884	S.21 53 2.2	9.601

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 11 49.53	2.2855	S.21 43 22.3	9.728
1	21 14 6.57	2.2825	21 33 34.8	9.855
2	21 16 23.43	2.2795	21 23 39.7	9.982
3	21 18 40.11	2.2765	21 13 37.0	10.107
4	21 20 56.61	2.2735	21 3 26.9	10 230
5	21 23 12.93	2.2705	20 53 9.4	10.352
6	21 25 29.07	2.2675	20 42 44.6	10.474
7	21 27 45.03	2.2645	20 32 12.5	10.596
8	21 30 0.81	2.2615	20 21 33.1	10.717
9	21 32 16.41	2.2585	20 10 46.5	10.836
10	21 34 31.83	2.2556	19 59 52.8	10.954
11	21 36 47.08	2.2526	19 48 52.0	11.071
12	21 39 2.14	2.2495	19 37 41.3	11.188
13	21 41 17.02	2.2466	19 26 29.6	11.303
14	21 43 31.73	2.2437	19 15 8.0	11.418
15	21 45 46.26	2.2407	19 3 39.5	11.532
16	21 48 0.61	2.2377	18 52 4.2	11.644
17	21 50 14.78	2.2348	18 40 22.2	11.755
18	21 52 28.78	2.2319	18 28 33.6	11.865
19	21 54 42.61	2.2290	18 16 38.4	11.975
20	21 56 56.26	2.2261	18 4 36.6	12.084
21	21 59 9.74	2.2233	17 52 28.3	12.192
22	22 1 23.05	2.2205	17 40 13.6	12.298
23	22 3 36.20	2.2177	17 27 52.6	12.403
24	22 5 49.18	2.2150	S.17 15 25.3	12.507

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 5 49.18	2.2150	S.17 15 25.3	12.507
1	22 8 2.00	2.2122	17 2 51.8	12.610
2	22 10 14.65	2.2095	16 50 12.1	12.712
3	22 12 27.14	2.2068	16 37 26.3	12.813
4	22 14 39.47	2.2042	16 24 34.5	12.913
5	22 16 51.65	2.2017	16 11 36.7	13.012
6	22 19 3.67	2.1991	15 58 33.1	13.109
7	22 21 15.54	2.1966	15 45 23.6	13.206
8	22 23 27.26	2.1941	15 32 8.3	13.302
9	22 25 38.83	2.1917	15 18 47.3	13.397
10	22 27 50.26	2.1893	15 5 20.7	13.490
11	22 30 1.54	2.1869	14 51 48.5	13.582
12	22 32 12.68	2.1846	14 38 10.8	13.673
13	22 34 23.69	2.1823	14 24 27.7	13.763
14	22 36 34.56	2.1801	14 10 39.2	13.852
15	22 38 45.30	2.1780	13 56 45.4	13.940
16	22 40 55.92	2.1759	13 42 46.4	14.027
17	22 43 6.41	2.1738	13 28 42.2	14.112
18	22 45 16.78	2.1718	13 14 33.0	14.196
19	22 47 27.03	2.1699	13 0 18.7	14.279
20	22 49 37.17	2.1680	12 45 59.5	14.360
21	22 51 47.19	2.1662	12 31 35.5	14.440
22	22 53 57.11	2.1644	12 17 6.7	14.520
23	22 56 6.92	2.1627	S.12 2 33.1	14.598

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	22 58 16.63	2.1610	S.11 47 54.9	14.675
1	23 0 26.24	2.1594	11 33 12.1	14.751
2	23 2 35.76	2.1579	11 18 24.8	14.825
3	23 4 45.19	2.1564	11 3 33.1	14.898
4	23 6 54.53	2.1550	10 48 37.0	14.970
5	23 9 3.79	2.1536	10 33 36.7	15.040
6	23 11 12.96	2.1523	10 18 32.2	15.109
7	23 13 22.06	2.1511	10 3 23.6	15.177
8	23 15 31.09	2.1500	9 48 10.9	15.245
9	23 17 40.06	2.1489	9 32 54.2	15.311
10	23 19 48.96	2.1479	9 17 33.6	15.375
11	23 21 57.81	2.1470	9 2 9.2	15.437
12	23 24 6.60	2.1461	8 46 41.1	15.498
13	23 26 15.34	2.1453	8 31 9.4	15.559
14	23 28 24.04	2.1446	8 15 34.0	15.619
15	23 30 32.69	2.1439	7 59 55.1	15.677
16	23 32 41.30	2.1432	7 44 12.8	15.733
17	23 34 49.88	2.1428	7 28 27.2	15.787
18	23 36 58.44	2.1424	7 12 38.4	15.840
19	23 39 6.97	2.1420	6 56 46.4	15.892
20	23 41 15.48	2.1417	6 40 51.3	15.944
21	23 43 23.97	2.1415	6 24 53.1	15.994
22	23 45 32.46	2.1414	6 8 52.0	16.042
23	23 47 40.94	2.1413	5 52 48.1	16.088
24	23 49 49.42	2.1414	S. 5 36 41.4	16.134

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 21.					MONDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 49 49.42	2.1414	S. 5 36 41.4	16.134	0	1 34 11.73	2.2393	N. 7 40 35.4	16.446
1	23 51 57.91	2.1415	5 20 32.0	16.177	1	1 36 26.21	2.2433	7 57 1.1	16.410
2	23 54 6.40	2.1416	5 4 20.1	16.219	2	1 38 40.93	2.2474	8 13 24.6	16.372
3	23 56 14.90	2.1418	4 48 5.7	16.260	3	1 40 55.90	2.2516	8 29 45.8	16.332
4	23 58 23.42	2.1422	4 31 48.9	16.300	4	1 43 11.13	2.2559	8 46 4.5	16.290
5	0 0 31.97	2.1427	4 15 29.7	16.338	5	1 45 26.61	2.2602	9 2 20.6	16.245
6	0 2 40.55	2.1432	3 59 8.3	16.374	6	1 47 42.35	2.2645	9 18 33.9	16.198
7	0 4 49.16	2.1438	3 42 44.8	16.409	7	1 49 58.35	2.2690	9 34 44.4	16.151
8	0 6 57.81	2.1444	3 26 19.2	16.443	8	1 52 14.63	2.2736	9 50 52.0	16.101
9	0 9 6.49	2.1451	3 9 51.6	16.476	9	1 54 31.18	2.2782	10 6 56.5	16.049
10	0 11 15.22	2.1460	2 53 22.1	16.506	10	1 56 48.01	2.2828	10 22 57.9	15.995
11	0 13 24.01	2.1469	2 36 50.9	16.534	11	1 59 5.12	2.2875	10 38 55.9	15.938
12	0 15 32.85	2.1478	2 20 18.0	16.562	12	2 1 22.51	2.2922	10 54 50.5	15.881
13	0 17 41.75	2.1489	2 3 43.5	16.588	13	2 3 40.19	2.2971	11 10 41.6	15.821
14	0 19 50.72	2.1501	1 47 7.4	16.613	14	2 5 58.16	2.3020	11 26 29.0	15.758
15	0 21 59.77	2.1514	1 30 29.9	16.636	15	2 8 16.43	2.3070	11 42 12.6	15.694
16	0 24 8.89	2.1528	1 13 51.1	16.657	16	2 10 35.00	2.3120	11 57 52.3	15.628
17	0 26 18.10	2.1542	0 57 11.1	16.676	17	2 12 53.87	2.3171	12 13 28.0	15.561
18	0 28 27.39	2.1556	0 40 30.0	16.694	18	2 15 13.05	2.3222	12 28 59.6	15.491
19	0 30 36.77	2.1572	0 23 47.8	16.711	19	2 17 32.54	2.3274	12 44 26.9	15.418
20	0 32 46.25	2.1589	S. 0 7 4.7	16.726	20	2 19 52.34	2.3326	12 59 49.8	15.343
21	0 34 55.84	2.1607	N. 0 9 39.3	16.739	21	2 22 12.45	2.3378	13 15 8.1	15.267
22	0 37 5.53	2.1625	0 26 24.0	16.751	22	2 24 32.88	2.3432	13 30 21.8	15.189
23	0 39 15.34	2.1644	N. 0 43 9.4	16.762	23	2 26 53.63	2.3486	N.13 45 30.8	15.109
	SUNDAY 22.					TUESDAY 24.			
0	0 41 25.26	2.1663	N. 0 59 55.4	16.770	0	2 29 14.71	2.3540	N.14 0 34.9	15.027
1	0 43 35.30	2.1684	1 16 41.8	16.776	1	2 31 36.11	2.3594	14 15 34.0	14.942
2	0 45 45.47	2.1706	1 33 28.5	16.781	2	2 33 57.84	2.3649	14 30 27.9	14.855
3	0 47 55.78	2.1729	1 50 15.5	16.785	3	2 36 19.90	2.3704	14 45 16.6	14.767
4	0 50 6.22	2.1752	2 7 2.7	16.787	4	2 38 42.29	2.3760	15 0 0.0	14.676
5	0 52 16.81	2.1777	2 23 49.9	16.786	5	2 41 5.02	2.3816	15 14 37.8	14.583
6	0 54 27.55	2.1802	2 40 37.0	16.784	6	2 43 28.08	2.3872	15 29 10.0	14.489
7	0 56 38.44	2.1827	2 57 24.0	16.781	7	2 45 51.48	2.3929	15 43 36.5	14.392
8	0 58 49.48	2.1854	3 14 10.7	16.776	8	2 48 15.22	2.3986	15 57 57.1	14.293
9	1 1 0.69	2.1882	3 30 57.1	16.769	9	2 50 39.31	2.4043	16 12 11.7	14.192
10	1 3 12.07	2.1911	3 47 43.0	16.760	10	2 53 3.74	2.4100	16 26 20.2	14.090
11	1 5 23.62	2.1940	4 4 28.3	16.749	11	2 55 28.51	2.4157	16 40 22.5	13.985
12	1 7 35.35	2.1970	4 21 12.9	16.737	12	2 57 53.62	2.4214	16 54 18.4	13.878
13	1 9 47.26	2.2001	4 37 56.7	16.723	13	3 0 19.08	2.4272	17 8 7.9	13.769
14	1 11 59.36	2.2032	4 54 39.6	16.708	14	3 2 44.89	2.4330	17 21 50.7	13.658
15	1 14 11.65	2.2065	5 11 21.6	16.691	15	3 5 11.04	2.4388	17 35 26.8	13.545
16	1 16 24.14	2.2098	5 28 2.5	16.671	16	3 7 37.54	2.4446	17 48 56.1	13.430
17	1 18 36.83	2.2132	5 44 42.1	16.648	17	3 10 4.39	2.4503	18 2 18.4	13.312
18	1 20 49.73	2.2167	6 1 20.3	16.625	18	3 12 31.58	2.4561	18 15 33.6	13.193
19	1 23 2.84	2.2203	6 17 57.1	16.600	19	3 14 59.12	2.4618	18 28 41.6	13.072
20	1 25 16.17	2.2239	6 34 32.3	16.573	20	3 17 27.00	2.4676	18 41 42.3	12.950
21	1 27 29.71	2.2276	6 51 5.9	16.545	21	3 19 55.23	2.4733	18 54 35.6	12.825
22	1 29 43.48	2.2315	7 7 37.7	16.514	22	3 22 23.80	2.4791	19 7 21.3	12.698
23	1 31 57.49	2.2354	7 24 7.6	16.481	23	3 24 52.72	2.4849	19 19 59.3	12.569
24	1 34 11.73	2.2393	N. 7 40 35.4	16.446	24	3 27 21.99	2.4906	N.19 32 29.6	12.439

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	3 27 21.99	2.4906	N.19 32 29.6	12.439
1	3 29 51.60	2.4962	19 44 52.0	12.306
2	3 32 21.54	2.5018	19 57 6.3	12.171
3	3 34 51.82	2.5075	20 9 12.5	12.035
4	3 37 22.44	2.5131	20 21 10.5	11.897
5	3 39 53.39	2.5186	20 33 0.1	11.757
6	3 42 24.67	2.5241	20 44 41.3	11.615
7	3 44 56.28	2.5296	20 56 13.9	11.471
8	3 47 28.22	2.5350	21 7 37.8	11.326
9	3 50 0.48	2.5403	21 18 53.0	11.179
10	3 52 33.06	2.5456	21 29 59.3	11.030
11	3 55 5.95	2.5508	21 40 56.6	10.879
12	3 57 39.16	2.5561	21 51 44.8	10.727
13	4 0 12.68	2.5612	22 2 23.8	10.573
14	4 2 46.50	2.5662	22 12 53.5	10.417
15	4 5 20.62	2.5711	22 23 13.8	10.259
16	4 7 55.03	2.5760	22 33 24.6	10.101
17	4 10 29.74	2.5809	22 43 25.9	9.941
18	4 13 4.74	2.5857	22 53 17.5	9.778
19	4 15 40.02	2.5903	23 2 59.3	9.615
20	4 18 15.57	2.5948	23 12 31.3	9.450
21	4 20 51.39	2.5992	23 21 53.3	9.283
22	4 23 27.47	2.6035	23 31 5.3	9.116
23	4 26 3.81	2.6078	N.23 40 7.2	8.947

THURSDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	4 28 40.41	2.6120	N.23 48 58.9	8.777
1	4 31 17.25	2.6160	23 57 40.4	8.605
2	4 33 54.33	2.6200	24 6 11.5	8.431
3	4 36 31.65	2.6238	24 14 32.1	8.256
4	4 39 9.19	2.6275	24 22 42.2	8.081
5	4 41 46.95	2.6310	24 30 41.8	7.905
6	4 44 24.91	2.6344	24 38 30.8	7.727
7	4 47 3.08	2.6378	24 46 9.1	7.548
8	4 49 41.45	2.6410	24 53 36.6	7.368
9	4 52 20.00	2.6440	25 0 53.3	7.187
10	4 54 58.73	2.6470	25 7 59.1	7.006
11	4 57 37.64	2.6498	25 14 54.0	6.823
12	5 0 16.71	2.6524	25 21 37.9	6.640
13	5 2 55.93	2.6549	25 28 10.8	6.455
14	5 5 35.30	2.6572	25 34 32.5	6.269
15	5 8 14.80	2.6594	25 40 43.1	6.083
16	5 10 54.43	2.6614	25 46 42.5	5.897
17	5 13 34.17	2.6632	25 52 30.7	5.709
18	5 16 14.02	2.6650	25 58 7.6	5.521
19	5 18 53.97	2.6666	26 3 33.2	5.332
20	5 21 34.01	2.6680	26 8 47.5	5.143
21	5 24 14.13	2.6692	26 13 50.4	4.953
22	5 26 54.32	2.6703	26 18 41.9	4.763
23	5 29 34.57	2.6712	26 23 22.0	4.573
24	5 32 14.86	2.6718	N.26 27 50.7	4.382

FRIDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	5 32 14.86	2.6718	N.26 27 50.7	4.382
1	5 34 55.19	2.6724	26 32 7.9	4.191
2	5 37 35.55	2.6729	26 36 13.6	3.999
3	5 40 15.94	2.6732	26 40 7.8	3.807
4	5 42 56.33	2.6732	26 43 50.5	3.615
5	5 45 36.72	2.6731	26 47 21.6	3.423
6	5 48 17.10	2.6728	26 50 41.3	3.232
7	5 50 57.46	2.6723	26 53 49.5	3.040
8	5 53 37.78	2.6717	26 56 46.1	2.848
9	5 56 18.06	2.6708	26 59 31.2	2.656
10	5 58 58.28	2.6698	27 2 4.8	2.464
11	6 1 38.44	2.6687	27 4 26.9	2.271
12	6 4 18.52	2.6673	27 6 37.4	2.079
13	6 6 58.52	2.6658	27 8 36.4	1.888
14	6 9 38.42	2.6641	27 10 24.0	1.698
15	6 12 18.21	2.6622	27 12 0.2	1.507
16	6 14 57.88	2.6602	27 13 24.9	1.317
17	6 17 37.43	2.6580	27 14 38.2	1.127
18	6 20 16.84	2.6556	27 15 40.2	0.938
19	6 22 56.10	2.6531	27 16 30.8	0.748
20	6 25 35.21	2.6503	27 17 10.0	0.560
21	6 28 14.14	2.6473	27 17 38.0	0.372
22	6 30 52.89	2.6443	27 17 54.7	+ 0.185
23	6 33 31.46	2.6412	N.27 18 0.2	– 0.001

SATURDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	6 36 9.83	2.6377	N.27 17 54.6	0.187
1	6 38 47.99	2.6342	27 17 37.8	0.372
2	6 41 25.93	2.6305	27 17 9.9	0.557
3	6 44 3.65	2.6267	27 16 31.0	0.740
4	6 46 41.13	2.6226	27 15 41.1	0.923
5	6 49 18.36	2.6184	27 14 40.2	1.105
6	6 51 55.34	2.6141	27 13 28.5	1.285
7	6 54 32.05	2.6096	27 12 6.0	1.465
8	6 57 8.49	2.6050	27 10 32.7	1.645
9	6 59 44.65	2.6002	27 8 48.6	1.823
10	7 2 20.52	2.5953	27 6 53.9	1.999
11	7 4 56.09	2.5902	27 4 48.7	2.174
12	7 7 31.35	2.5851	27 2 33.0	2.349
13	7 10 6.30	2.5797	27 0 6.8	2.523
14	7 12 40.92	2.5742	26 57 30.2	2.696
15	7 15 15.21	2.5687	26 54 43.3	2.867
16	7 17 49.17	2.5631	26 51 46.2	3.037
17	7 20 22.78	2.5572	26 48 38.9	3.206
18	7 22 56.04	2.5513	26 45 21.5	3.373
19	7 25 28.94	2.5453	26 41 54.1	3.539
20	7 28 1.48	2.5392	26 38 16.8	3.703
21	7 30 33.64	2.5329	26 34 29.7	3.867
22	7 33 5.42	2.5265	26 30 32.8	4.029
23	7 35 36.82	2.5201	26 26 26.2	4.191
24	7 38 7.84	2.5136	N.26 22 9.9	4.351

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	7 38 7.84	2.5136	N.26 22 9.9	4.351
1	7 40 38.46	2.5069	26 17 44.1	4.508
2	7 43 8.67	2.5002	26 13 8.9	4.664
3	7 45 38.48	2.4933	26 8 24.4	4.819
4	7 48 7.87	2.4864	26 3 30.6	4.973
5	7 50 36.85	2.4795	25 58 27.6	5.126
6	7 53 5.41	2.4724	25 53 15.5	5.277
7	7 55 33.54	2.4653	25 47 54.4	5.426
8	7 58 1.24	2.4581	25 42 24.4	5.573
9	8 0 28.51	2.4508	25 36 45.6	5.719
10	8 2 55.34	2.4434	25 30 58.1	5.864
11	8 5 21.72	2.4360	25 25 1.9	6.007
12	8 7 47.66	2.4286	25 18 57.2	6.149
13	8 10 13.16	2.4212	25 12 44.0	6.289
14	8 12 38.20	2.4136	25 6 22.5	6.428
15	8 15 2.79	2.4060	24 59 52.7	6.565
16	8 17 26.92	2.3983	24 53 14.7	6.700
17	8 19 50.59	2.3907	24 46 28.7	6.833
18	8 22 13.81	2.3831	24 39 34.7	6.966
19	8 24 36.56	2.3754	24 32 32.8	7.097
20	8 26 58.85	2.3676	24 25 23.1	7.226
21	8 29 20.67	2.3598	24 18 5.7	7.353
22	8 31 42.02	2.3520	24 10 40.7	7.479
23	8 34 2.91	2.3442	N.24 3 8.2	7.603

MONDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	8 36 23.33	2.3364	N.23 55 28.3	7.726
1	8 38 43.28	2.3286	23 47 41.1	7.847
2	8 41 2.76	2.3207	23 39 46.6	7.967
3	8 43 21.76	2.3128	23 31 45.0	8.086
4	8 45 40.29	2.3049	23 23 36.3	8.202
5	8 47 58.35	2.2971	23 15 20.7	8.317
6	8 50 15.94	2.2892	23 6 58.3	8.430
7	8 52 33.06	2.2814	22 58 29.1	8.542
8	8 54 49.71	2.2735	22 49 53.2	8.652
9	8 57 5.88	2.2656	22 41 10.8	8.761
10	8 59 21.58	2.2578	22 32 21.9	8.868
11	9 1 36.82	2.2501	22 23 26.6	8.974
12	9 3 51.59	2.2423	22 14 25.0	9.078
13	9 6 5.89	2.2345	22 5 17.2	9.181
14	9 8 19.73	2.2267	21 56 3.3	9.282
15	9 10 33.10	2.2190	21 46 43.3	9.382
16	9 12 46.01	2.2113	21 37 17.4	9.480
17	9 14 58.46	2.2036	21 27 45.7	9.577
18	9 17 10.44	2.1959	21 18 8.2	9.672
19	9 19 21.97	2.1883	21 8 25.0	9.766
20	9 21 33.04	2.1807	20 58 36.3	9.858
21	9 23 43.66	2.1732	20 48 42.1	9.949
22	9 25 53.82	2.1657	20 38 42.4	10.039
23	9 28 3.54	2.1582	20 28 37.4	10.127
24	9 30 12.81	2.1507	N.20 18 27.2	10.213

TUESDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	9 30 12.81	2.1507	N.20 18 27.2	10.213
1	9 32 21.63	2.1434	20 8 11.8	10.299
2	9 34 30.01	2.1361	19 57 51.3	10.382
3	9 36 37.96	2.1288	19 47 25.9	10.464
4	9 38 45.47	2.1216	19 36 55.6	10.546
5	9 40 52.55	2.1144	19 26 20.4	10.626
6	9 42 59.20	2.1072	19 15 40.5	10.704
7	9 45 5.42	2.1002	19 4 55.9	10.782
8	9 47 11.22	2.0932	18 54 6.7	10.858
9	9 49 16.60	2.0862	18 43 13.0	10.932
10	9 51 21.56	2.0793	18 32 14.9	11.005
11	9 53 26.11	2.0724	18 21 12.4	11.077
12	9 55 30.25	2.0656	18 10 5.7	11.147
13	9 57 33.98	2.0588	17 58 54.8	11.217
14	9 59 37.31	2.0522	17 47 39.7	11.285
15	10 1 40.24	2.0456	17 36 20.6	11.351
16	10 3 42.78	2.0391	17 24 57.6	11.417
17	10 5 44.93	2.0325	17 13 30.6	11.482
18	10 7 46.68	2.0260	17 1 59.8	11.544
19	10 9 48.05	2.0197	16 50 25.3	11.606
20	10 11 49.04	2.0134	16 38 47.1	11.667
21	10 13 49.66	2.0072	16 27 5.2	11.727
22	10 15 49.90	2.0010	16 15 19.8	11.786
23	10 17 49.78	1.9949	N.16 3 30.9	11.843

WEDNESDAY JUNE 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 19 49.29	1.9888	N.15 51 38.6	11.900

PHASES OF THE MOON.

		d	h	m
☽ First Quarter . .	May	3	7	11.5
○ Full Moon		11	10	59.0
☾ Last Quarter		19	2	52.6
● New Moon		25	17	49.1

		d	h
☾ Apogee	May	8	17.3
☾ Perigee		24	4.5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	62° 12′ 36″	2814	63° 46′ 46″	2835	65° 20′ 29″	2855	66° 53′ 46″	2874
	Aldebaran	W.	36 42 11	2591	38 21 19	2602	40 0 11	2615	41 38 46	2628
	Venus	W.	16 38 36	2811	18 12 50	2831	19 46 37	2851	21 19 59	2871
	Regulus	E.	44 47 27	2523	43 6 46	2543	41 26 33	2564	39 46 49	2585
	Saturn	E.	70 1 22	2482	68 19 43	2501	66 38 31	2520	64 57 45	2538
	Spica	E.	98 48 19	2504	97 7 11	2523	95 26 30	2541	93 46 14	2560
2	Sun	W.	74 33 56	2971	76 4 45	2990	77 35 10	3009	79 5 12	3026
	Aldebaran	W.	49 47 3	2698	51 23 45	2713	53 0 7	2729	54 36 9	2743
	Venus	W.	29 0 35	2966	30 31 31	2985	32 2 3	3002	33 32 13	3021
	Regulus	E.	31 35 28	2695	29 58 41	2719	28 22 26	2743	26 46 43	2768
	Saturn	E.	56 40 15	2629	55 1 59	2646	53 24 7	2663	51 46 38	2681
	Spica	E.	85 31 12	2650	83 53 25	2667	82 16 1	2685	80 39 1	2702
3	Sun	W.	86 29 53	3114	87 57 46	3129	89 25 20	3146	90 52 34	3162
	Aldebaran	W.	62 31 31	2815	64 5 39	2829	65 39 29	2843	67 13 1	2856
	Venus	W.	40 57 37	3105	42 25 40	3121	43 53 24	3137	45 20 49	3153
	Pollux	W.	18 11 43	2790	19 46 24	2803	21 20 48	2815	22 54 56	2828
	Saturn	E.	43 44 50	2762	42 9 32	2778	40 34 35	2793	38 59 58	2808
	Spica	E.	72 39 34	2783	71 4 44	2798	69 30 14	2814	67 56 4	2828
4	Sun	W.	98 4 14	3233	99 29 44	3247	100 54 58	3259	102 19 57	3271
	Venus	W.	52 33 30	3222	53 59 13	3235	55 24 41	3247	56 49 55	3259
	Pollux	W.	30 41 30	2890	32 14 2	2901	33 46 20	2912	35 18 24	2923
	Saturn	E.	31 11 32	2877	29 38 44	2891	28 6 13	2903	26 33 58	2915
	Spica	E.	60 9 50	2897	58 37 27	2910	57 5 21	2922	55 33 30	2934
5	Sun	W.	109 21 29	3326	110 45 10	3336	112 8 40	3345	113 32 0	3354
	Venus	W.	63 52 46	3312	65 16 44	3320	66 40 32	3329	68 4 10	3 38
	Pollux	W.	42 55 26	2972	44 26 14	2980	45 56 52	2989	47 27 19	2996
	Spica	E.	47 57 52	2989	46 27 25	2998	44 57 10	3009	43 27 8	3018
	Antares	E.	93 46 58	2971	92 16 9	2980	90 45 31	2989	89 15 4	2997
6	Venus	W.	75 0 4	3372	76 22 52	3378	77 45 34	3384	79 8 9	3388
	Pollux	W.	54 57 19	3030	56 26 55	3035	57 56 24	3040	59 25 47	3046
	Regulus	W.	19 1 56	3160	20 28 53	3148	21 56 5	3138	23 23 28	3133
	Spica	E.	35 59 49	3062	34 30 53	3071	33 2 8	3079	31 33 33	3088
	Antares	E.	81 45 10	3031	80 15 36	3037	78 46 9	3042	77 16 48	3047
7	Pollux	W.	66 51 18	3065	68 20 11	3067	69 49 1	3069	71 17 48	3072
	Regulus	W.	30 41 46	3117	32 9 35	3114	33 37 27	3114	35 5 20	3112
	Antares	E.	69 51 29	3067	68 22 39	3069	66 53 52	3072	65 25 8	3074
8	Pollux	W.	78 41 12	3077	80 9 50	3078	81 38 27	3078	83 7 4	3077
	Regulus	W.	42 25 7	3106	43 53 9	3105	45 21 12	3103	46 49 18	3102
	Antares	E.	58 2 4	3082	56 33 32	3082	55 5 0	3082	53 36 28	3082
9	Pollux	W.	90 30 23	3072	91 59 7	3070	93 27 53	3068	94 56 42	3066
	Regulus	W.	54 10 17	3091	55 38 37	3089	57 7 0	3087	58 35 26	3083
	Saturn	W.	28 55 42	3069	30 24 30	3066	31 53 21	3064	33 22 15	3061
	Antares	E.	46 13 43	3078	44 45 7	3078	43 16 30	3076	41 47 51	3074
	α Aquilæ	E.	95 40 40	3910	94 27 30	3906	93 14 16	3901	92 0 57	3898

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	68° 26′ 38″	2894	69° 59′ 4″	2913	71° 31′ 6″	2933	73° 2′ 43″	2952
	Aldebaran	W.	43 17 3	2642	44 55 1	2655	46 32 41	2669	48 10 2	2684
	Venus	W.	22 52 55	2891	24 25 26	2909	25 57 33	2928	27 29 16	2947
	Regulus	E.	38 7 34	2607	36 28 48	2629	34 50 32	2650	33 12 45	2672
	Saturn	E.	63 17 24	2556	61 37 29	2575	59 58 0	2593	58 18 55	2611
	Spica	E.	92 6 24	2578	90 26 59	2596	88 47 59	2614	87 9 23	2632
2	Sun	W.	80 34 52	3045	82 4 9	3062	83 33 5	3080	85 1 39	3096
	Aldebaran	W.	56 11 52	2758	57 47 15	2772	59 22 19	2787	60 57 4	2801
	Venus	W.	35 2 0	3038	36 31 26	3056	38 0 30	3072	39 29 14	3089
	Regulus	E.	25 11 33	2795	23 36 58	2823	22 3 0	2854	20 29 42	2888
	Saturn	E.	50 9 32	2698	48 32 49	2714	46 56 28	2730	45 20 28	2747
	Spica	E.	79 2 24	2719	77 26 9	2735	75 50 16	2752	74 14 45	2767
3	Sun	W.	92 19 29	3177	93 46 6	3191	95 12 26	3206	96 38 28	3220
	Aldebaran	W.	68 46 16	2869	70 19 14	2883	71 51 55	2895	73 24 20	2907
	Venus	W.	46 47 55	3167	48 14 44	3181	49 41 16	3195	51 7 31	3209
	Pollux	W.	24 28 47	2841	26 2 22	2854	27 35 40	2866	29 8 43	2878
	Saturn	E.	37 25 40	2822	35 51 41	2836	34 18 0	2850	32 44 37	2864
	Spica	E.	66 22 13	2842	64 48 40	2857	63 15 26	2870	61 42 29	2884
4	Sun	W.	103 44 42	3283	105 9 13	3294	106 33 31	3306	107 57 36	3316
	Venus	W.	58 14 55	3270	59 39 41	3281	61 4 15	3292	62 28 36	3301
	Pollux	W.	36 50 14	2933	38 21 51	2943	39 53 15	2954	41 24 26	2962
	Saturn	E.	25 1 58	2927	23 30 14	2940	21 58 46	2952	20 27 33	2965
	Spica	E.	54 1 54	2946	52 30 33	2957	50 59 26	2967	49 28 32	2978
5	Sun	W.	114 55 9	3362	116 18 9	3370	117 41 0	3377	119 3 43	3385
	Venus	W.	69 27 38	3347	70 50 57	3353	72 14 7	3360	73 37 9	3366
	Pollux	W.	48 57 37	3004	50 27 45	3010	51 57 45	3018	53 27 36	3024
	Spica	E.	41 57 18	3027	40 27 39	3037	38 58 12	3045	37 28 55	3054
	Antares	E.	87 44 47	3004	86 14 39	3012	84 44 41	3018	83 14 51	3026
6	Venus	W.	80 30 39	3393	81 53 4	3397	83 15 24	3400	84 37 40	3405
	Pollux	W.	60 55 3	3050	62 24 14	3054	63 53 20	3058	65 22 21	3061
	Regulus	W.	24 50 58	3128	26 18 34	3124	27 46 15	3121	29 13 59	3119
	Spica	E.	30 5 9	3097	28 36 56	3106	27 8 54	3116	25 41 4	3126
	Antares	E.	75 47 34	3052	74 18 25	3056	72 49 22	3060	71 20 23	3064
7	Pollux	W.	72 46 32	3073	74 15 14	3074	75 43 55	3076	77 12 34	3077
	Regulus	W.	36 33 15	3111	38 1 11	3110	39 29 8	3109	40 57 7	3108
	Antares	E.	63 56 27	3076	62 27 48	3078	60 59 12	3079	59 30 37	3081
8	Pollux	W.	84 35 42	3076	86 4 21	3076	87 33 0	3074	89 1 41	3073
	Regulus	W.	48 17 25	3101	49 45 34	3098	51 13 46	3096	52 42 0	3094
	Antares	E.	52 7 56	3082	50 39 24	3081	49 10 51	3080	47 42 17	3080
9	Pollux	W.	96 25 33	3064	97 54 27	3060	99 23 25	3058	100 52 26	3056
	Regulus	W.	60 3 56	3081	61 32 29	3078	63 1 6	3074	64 29 47	3070
	Saturn	W.	34 51 12	3058	36 20 13	3056	37 49 17	3052	39 18 25	3048
	Antares	E.	40 19 10	3073	38 50 27	3070	37 21 41	3069	35 52 53	3066
	α Aquilæ	E.	90 47 35	3894	89 34 9	3892	88 20 41	3891	87 7 12	3889

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
10	Regulus	W.	65 58 33	3067	67 27 23	3064	68 56 17	3059	70 25 17	3056
	Saturn	W.	40 47 38	3045	42 16 55	3042	43 46 16	3038	45 15 42	3034
	Antares	E.	34 24 2	3064	32 55 8	3062	31 26 12	3060	29 57 14	3058
	α Aquilæ	E.	85 53 41	3889	84 40 10	3890	83 26 40	3892	82 13 12	3894
	Mars	E.	87 25 34	3232	86 0 3	3229	84 34 28	3225	83 8 48	3220
11	Regulus	W.	77 51 31	3033	79 21 3	3029	80 50 40	3024	82 20 23	3018
	Saturn	W.	52 44 4	3013	54 14 1	3009	55 44 3	3003	57 14 12	2998
	Spica	W.	23 56 14	3088	25 24 38	3075	26 53 18	3065	28 22 11	3054
	Mars	E.	75 59 13	3198	74 33 1	3193	73 6 44	3188	71 40 21	3183
	α Aquilæ	E.	76 6 45	3919	74 53 45	3927	73 40 53	3937	72 28 11	3948
12	Saturn	W.	64 46 31	2973	66 17 18	2966	67 48 13	2961	69 19 15	2955
	Spica	W.	35 49 31	3011	37 19 30	3003	38 49 39	2995	40 19 58	2988
	Mars	E.	64 26 46	3155	62 59 43	3149	61 32 33	3143	60 5 16	3137
	α Aquilæ	E.	66 27 50	4024	65 16 34	4044	64 5 38	4067	62 55 4	4090
	Fomalhaut	E.	93 31 18	3150	92 4 9	3143	90 36 52	3138	89 9 28	3132
13	Saturn	W.	76 56 19	2924	78 28 8	2917	80 0 5	2910	81 32 11	2904
	Spica	W.	47 53 54	2950	49 25 10	2942	50 56 36	2935	52 28 11	2927
	Mars	E.	52 46 54	3105	51 18 50	3098	49 50 38	3091	48 22 18	3084
	α Aquilæ	E.	57 8 57	4255	56 1 23	4297	54 54 28	4345	53 48 17	4396
	Fomalhaut	E.	81 50 47	3105	80 22 43	3100	78 54 33	3095	77 26 17	3091
14	Spica	W.	60 8 34	2887	61 41 9	2880	63 13 54	2872	64 46 49	2863
	Mars	E.	40 58 28	3048	39 29 15	3041	37 59 53	3034	36 30 22	3026
	Fomalhaut	E.	70 3 37	3070	68 34 51	3066	67 6 0	3063	65 37 5	3060
	α Pegasi	E.	90 29 37	3254	89 4 32	3247	87 39 19	3241	86 13 58	3234
15	Spica	W.	72 34 10	2820	74 8 12	2811	75 42 26	2802	77 16 51	2792
	Antares	W.	26 40 29	2828	28 14 20	2818	29 48 25	2807	31 22 44	2797
	Fomalhaut	E.	58 11 51	3053	56 42 44	3054	55 13 38	3055	53 44 33	3056
	α Pegasi	E.	79 5 26	3208	77 39 26	3204	76 13 21	3200	74 47 12	3198
	Jupiter	E.	98 43 32	2882	97 10 50	2873	95 37 57	2864	94 4 52	2854
16	Spica	W.	85 12 5	2744	86 47 46	2734	88 23 41	2723	89 59 50	2713
	Antares	W.	39 17 47	2743	40 53 30	2732	42 29 27	2722	44 5 38	2710
	Fomalhaut	E.	46 20 7	3083	44 51 37	3093	43 23 19	3105	41 55 16	3121
	α Pegasi	E.	67 35 50	3193	66 9 32	3193	64 43 15	3196	63 17 1	3200
	Jupiter	E.	86 16 20	2805	84 41 59	2795	83 7 25	2785	81 32 37	2774
17	Antares	W.	52 10 17	2654	53 47 59	2642	55 25 57	2630	57 4 11	2618
	α Pegasi	E.	56 7 26	3238	54 42 2	3251	53 16 53	3266	51 52 2	3284
	Jupiter	E.	73 35 2	2718	71 58 46	2707	70 22 15	2695	68 45 28	2683
	Sun	E.	116 15 14	2978	114 44 34	2966	113 13 39	2954	111 42 28	2941
18	Antares	W.	65 19 30	2556	66 59 25	2543	68 39 38	2530	70 20 9	2517
	Jupiter	E.	60 37 27	2621	58 59 0	2608	57 20 16	2595	55 41 14	2583
	Sun	E.	104 2 28	2875	102 29 37	2862	100 56 29	2848	99 23 3	2834
19	Antares	W.	78 47 17	2452	80 29 38	2438	82 12 19	2424	83 55 19	2411
	α Aquilæ	W.	43 13 57	4833	44 13 6	4670	45 14 31	4523	46 18 3	4387

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
10	Regulus	W.	71 54 21	3052	73 23 30	3047	74 52 45	3043	76 22 5	3038
	SATURN	W.	46 45 12	3030	48 14 47	3026	49 44 27	3022	51 14 13	3018
	Antares	E.	28 28 13	3056	26 59 10	3055	25 30 5	3053	24 0 58	3052
	α Aquilæ	E.	80 59 46	3897	79 46 23	3902	78 33 5	3907	77 19 52	3913
	MARS	E.	81 43 3	3217	80 17 14	3212	78 51 19	3208	77 25 19	3203
11	Regulus	W.	83 50 13	3014	85 20 9	3008	86 50 12	3003	88 20 21	2997
	SATURN	W.	58 44 27	2993	60 14 48	2988	61 45 16	2983	63 15 50	2977
	Spica	W.	29 51 17	3045	31 20 34	3035	32 50 3	3027	34 19 42	3019
	MARS	E.	70 13 51	3178	68 47 15	3172	67 20 32	3166	65 53 42	3161
	α Aquilæ	E.	71 15 40	3960	70 3 21	3973	68 51 15	3988	67 39 24	4006
12	SATURN	W.	70 50 24	2949	72 21 41	2942	73 53 6	2936	75 24 39	2931
	Spica	W.	41 50 26	2980	43 21 4	2973	44 51 51	2965	46 22 48	2958
	MARS	E.	58 37 51	3130	57 10 18	3124	55 42 38	3118	54 14 50	3111
	α Aquilæ	E.	61 44 53	4118	60 35 9	4147	59 25 53	4180	58 17 8	4216
	Fomalhaut	E.	87 41 57	3126	86 14 19	3121	84 46 35	3115	83 18 44	3110
13	SATURN	W.	83 4 25	2897	84 36 48	2890	86 9 20	2883	87 42 1	2875
	Spica	W.	53 59 56	2919	55 31 51	2912	57 3 55	2904	58 36 9	2895
	MARS	E.	46 53 49	3078	45 25 12	3070	43 56 26	3064	42 27 32	3056
	α Aquilæ	E.	52 42 52	4453	51 38 18	4514	50 34 38	4581	49 31 57	4657
	Fomalhaut	E.	75 57 56	3086	74 29 29	3082	73 0 57	3077	71 32 19	3073
14	Spica	W.	66 19 55	2855	67 53 12	2846	69 26 40	2838	71 0 19	2828
	MARS	E.	35 0 42	3019	33 30 53	3013	32 0 56	3005	30 30 50	2998
	Fomalhaut	E.	64 8 7	3058	62 39 6	3056	61 10 2	3055	59 40 57	3054
	α Pegasi	E.	84 48 29	3228	83 22 53	3222	81 57 10	3217	80 31 21	3212
15	Spica	W.	78 51 29	2783	80 26 19	2773	82 1 22	2764	83 36 37	2754
	Antares	W.	32 57 16	2786	34 32 2	2775	36 7 3	2764	37 42 18	2753
	Fomalhaut	E.	52 15 30	3060	50 46 31	3063	49 17 36	3068	47 48 47	3075
	α Pegasi	E.	73 21 0	3195	71 54 45	3193	70 28 28	3192	69 2 9	3192
	JUPITER	E.	92 31 34	2845	90 58 4	2835	89 24 22	2825	87 50 27	2816
16	Spica	W.	91 36 12	2703	93 12 48	2692	94 49 39	2681	96 26 44	2669
	Antares	W.	45 42 4	2700	47 18 44	2688	48 55 40	2677	50 32 51	2666
	Fomalhaut	E.	40 27 32	3139	39 0 10	3161	37 33 14	3187	36 6 49	3218
	α Pegasi	E.	61 50 52	3204	60 24 48	3210	58 58 51	3218	57 33 3	3227
	JUPITER	E.	79 57 35	2763	78 22 19	2752	76 46 48	2741	75 11 3	2729
17	Antares	W.	58 42 41	2606	60 21 28	2593	62 0 32	2582	63 39 52	2569
	α Pegasi	E.	50 27 32	3305	49 3 26	3330	47 39 49	3358	46 16 44	3390
	JUPITER	E.	67 8 25	2670	65 31 5	2658	63 53 29	2646	62 15 36	2634
	SUN	E.	110 11 1	2928	108 39 18	2915	107 7 18	2901	105 35 1	2889
18	Antares	W.	72 0 58	2504	73 42 5	2492	75 23 30	2478	77 5 14	2465
	JUPITER	E.	54 1 55	2569	52 22 17	2556	50 42 21	2543	49 2 7	2529
	SUN	E.	97 49 19	2820	96 15 17	2806	94 40 57	2792	93 6 18	2778
19	Antares	W.	85 38 38	2398	87 22 16	2384	89 6 14	2371	90 50 31	2357
	α Aquilæ	W.	47 23 36	4264	48 31 2	4150	49 40 16	4045	50 51 11	3949

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
19	**Mars**	W.	21° 47′ 12″	2626	23° 25′ 32″	2607	25° 4′ 18″	2588	26° 43′ 29″	2571
	Jupiter	E.	47 21 34	2515	45 40 42	2502	43 59 32	2489	42 18 3	2475
	Sun	E.	91 31 21	2763	89 56 5	2749	88 20 30	2735	86 44 36	2720
20	α Aquilæ	W.	52 3 41	3859	53 17 42	3777	54 33 8	3701	55 49 54	3630
	Mars	W.	35 5 14	2489	36 46 42	2475	38 28 31	2460	40 10 41	2444
	Jupiter	E.	33 45 53	2406	32 2 30	2396	30 18 49	2383	28 34 49	2371
	α Arietis	E.	56 38 40	2456	54 56 25	2448	53 13 58	2440	51 31 20	2433
	Sun	E.	78 40 17	2648	77 2 27	2634	75 24 18	2619	73 45 49	2606
21	α Aquilæ	W.	62 31 20	3344	63 54 41	3297	65 18 56	3254	66 44 1	3214
	Mars	W.	48 46 43	2374	50 30 55	2361	52 15 26	2348	54 0 16	2335
	Fomalhaut	W.	28 8 2	3096	29 36 17	2993	31 6 38	2905	32 38 50	2828
	Sun	E.	65 28 42	2537	63 48 20	2525	62 7 41	2512	60 26 44	2499
22	α Aquilæ	W.	74 0 13	3055	75 29 18	3030	76 58 53	3008	78 28 56	2988
	Mars	W.	62 48 52	2277	64 35 25	2266	66 22 14	2257	68 9 17	2247
	Fomalhaut	W.	40 41 19	2560	42 21 9	2522	44 1 52	2488	45 43 22	2458
	Sun	E.	51 57 48	2442	50 15 13	2432	48 32 24	2422	46 49 21	2413
23	**Mars**	W.	77 7 52	2207	78 56 9	2200	80 44 36	2195	82 33 11	2190
	Fomalhaut	W.	54 20 30	2342	56 5 29	2325	57 50 52	2310	59 36 37	2296
	α Pegasi	W.	38 32 58	3202	39 59 5	3112	41 27 0	3033	42 56 32	2963
	Sun	E.	38 11 3	2375	36 26 52	2369	34 42 33	2364	32 58 7	2359
24	Fomalhaut	W.	68 29 44	2249	70 16 59	2243	72 4 22	2239	73 51 52	2236
	α Pegasi	W.	50 43 20	2715	52 19 40	2681	53 56 45	2652	55 34 30	2626
	Jupiter	W.	23 48 57	2118	25 39 28	2116	27 30 2	2115	29 20 39	2115
	Sun	E.	24 14 40	2349	22 29 52	2350	20 45 5	2352	19 0 21	2356
27	**Sun**	W.	17 27 31	2524	19 8 11	2536	20 48 34	2549	22 28 39	2563
	Regulus	E.	64 33 39	2226	62 45 50	2240	60 58 22	2256	59 11 17	2270
	Saturn	E.	89 24 46	2210	87 36 34	2225	85 48 44	2239	84 1 15	2254
28	**Sun**	W.	30 43 58	2642	32 21 56	2660	33 59 30	2678	35 36 40	2695
	Regulus	E.	50 21 42	2354	48 37 1	2373	46 52 47	2391	45 8 59	2410
	Saturn	E.	75 9 28	2333	73 24 17	2350	71 39 31	2367	69 55 9	2384
	Spica	E.	104 23 50	2342	102 38 51	2358	100 54 16	2375	99 10 5	2392
29	**Sun**	W.	43 36 24	2789	45 11 6	2808	46 45 24	2826	48 19 16	2846
	Regulus	E.	36 36 56	2511	34 55 58	2533	33 15 30	2555	31 35 33	2578
	Saturn	E.	61 19 36	2473	59 37 45	2492	57 56 20	2510	56 15 20	2528
	Spica	E.	90 35 22	2480	88 53 40	2498	87 12 24	2516	85 31 33	2534
30	**Sun**	W.	56 2 29	2942	57 33 54	2961	59 4 56	2980	60 35 34	2998
	Saturn	E.	47 56 40	2618	46 18 10	2637	44 40 5	2655	43 2 24	2672
	Spica	E.	77 13 31	2624	75 35 8	2642	73 57 10	2659	72 19 35	2677
31	**Sun**	W.	68 3 3	3088	69 31 27	3105	70 59 30	3122	72 27 13	3139
	Pollux	W.	26 33 35	2759	28 8 57	2773	29 44 0	2788	31 18 44	2802
	Saturn	E.	34 59 48	2758	33 24 25	2774	31 49 23	2791	30 14 43	2808
	Spica	E.	64 17 29	2762	62 42 11	2778	61 7 14	2794	59 32 38	2810

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
19	Mars	W.	28° 23′ 4″	2554	30° 3′ 2″	2537	31° 43′ 24″	2521	33° 24′ 8″	2505
	Jupiter	E.	40 36 15	2462	38 54 8	2448	37 11 42	2435	35 28 57	2422
	Sun	E.	85 8 23	2706	83 31 51	2691	81 54 59	2677	80 17 48	2662
20	α Aquilæ	W.	57 7 56	3565	58 27 9	3503	59 47 30	3446	61 8 55	3393
	Mars	W.	41 53 13	2430	43 36 5	2415	45 19 18	2401	47 2 51	2388
	Jupiter	E.	26 50 32	2358	25 5 57	2346	23 21 5	2335	21 35 56	2324
	α Arietis	E.	49 48 33	2427	48 5 37	2423	46 22 35	2419	44 39 28	2417
	Sun	E.	72 7 2	2591	70 27 55	2578	68 48 30	2564	67 8 45	2551
21	α Aquilæ	W.	68 9 53	3178	69 36 29	3143	71 3 46	3112	72 31 41	3082
	Mars	W.	55 45 24	2323	57 30 50	2311	59 16 34	2299	61 2 35	2288
	Fomalhaut	W.	34 12 41	2761	35 48 0	2701	37 24 38	2649	39 2 27	2602
	Sun	E.	58 45 30	2487	57 3 59	2475	55 22 11	2464	53 40 7	2453
22	α Aquilæ	W.	79 59 24	2969	81 30 15	2953	83 1 27	2939	84 32 57	2927
	Mars	W.	69 56 35	2238	71 44 6	2229	73 31 50	2222	75 19 45	2214
	Fomalhaut	W.	47 25 35	2429	49 8 28	2404	50 51 57	2382	52 35 58	2360
	Sun	E.	45 6 5	2404	43 22 36	2396	41 38 56	2389	39 55 5	2381
23	Mars	W.	84 21 54	2185	86 10 44	2181	87 59 40	2178	89 48 41	2176
	Fomalhaut	W.	61 22 43	2283	63 9 7	2273	64 55 46	2264	66 42 39	2256
	α Pegasi	W.	44 27 31	2901	45 59 49	2845	47 33 18	2797	49 7 50	2753
	Sun	E.	31 13 34	2356	29 28 56	2353	27 44 13	2350	25 59 27	2350
24	Fomalhaut	W.	75 39 26	2234	77 27 3	2233	79 14 42	2233	81 2 20	2234
	α Pegasi	W.	57 12 50	2603	58 51 41	2583	60 31 0	2566	62 10 42	2552
	Jupiter	W.	31 11 16	2115	33 1 53	2116	34 52 28	2118	36 43 0	2120
	Sun	E.	17 15 43	2362	15 31 13	2369	13 46 54	2380	12 2 50	2393
27	Sun	W.	24 8 25	2577	25 47 51	2593	27 26 55	2609	29 5 38	2626
	Regulus	E.	57 24 34	2287	55 38 15	2302	53 52 19	2320	52 6 48	2337
	Saturn	E.	82 14 8	2269	80 27 23	2285	78 41 1	2301	76 55 3	2317
28	Sun	W.	37 13 26	2714	38 49 47	2732	40 25 44	2751	42 1 16	2769
	Regulus	E.	43 25 39	2429	41 42 46	2449	40 0 21	2469	38 18 24	2489
	Saturn	E.	68 11 12	2402	66 27 40	2419	64 44 33	2438	63 1 52	2455
	Spica	E.	97 26 19	2410	95 42 58	2426	94 0 1	2444	92 17 29	2462
29	Sun	W.	49 52 44	2866	51 25 47	2885	52 58 25	2904	54 30 39	2923
	Regulus	E.	29 56 8	2602	28 17 16	2627	26 38 58	2654	25 1 16	2681
	Saturn	E.	54 34 46	2546	52 54 37	2564	51 14 53	2583	49 35 34	2601
	Spica	E.	83 51 7	2552	82 11 6	2570	80 31 30	2588	78 52 18	2606
30	Sun	W.	62 5 49	3017	63 35 41	3035	65 5 10	3053	66 34 17	3070
	Saturn	E.	41 25 6	2689	39 48 12	2707	38 11 41	2724	36 35 33	2741
	Spica	E.	70 42 24	2694	69 5 36	2711	67 29 11	2729	65 53 9	2745
31	Sun	W.	73 54 35	3155	75 21 38	3171	76 48 22	3186	78 14 48	3202
	Pollux	W.	32 53 9	2817	34 27 15	2831	36 1 3	2845	37 34 33	2858
	Saturn	E.	28 40 25	2823	27 6 27	2839	25 32 50	2855	23 59 33	2871
	Spica	E.	57 58 23	2825	56 24 28	2841	54 50 53	2855	53 17 37	2870

AT GREENWICH APPARENT NOON

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from / Added to Apparent Time.	Diff. for 1 Hour
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	4 39 23.64	10.244	N.22 9 43.6	+19.69	15 48.25	68.45	2 19.19	0.387
Thur.	2	4 43 29.69	10.259	22 17 24.7	18.72	15 48.12	68.50	2 9.74	0.402
Frid.	3	4 47 36.09	10.273	22 24 42.4	17.74	15 48.00	68.55	1 59.93	0.416
Sat.	4	4 51 42.82	10.286	22 31 36.6	+16.76	15 47.88	68.60	1 49.79	0.429
SUN.	5	4 55 49.86	10.299	22 38 7.2	15.77	15 47.77	68.65	1 39.33	0.442
Mon.	6	4 59 57.21	10.311	22 44 13.9	14.78	15 47.66	68.69	1 28.57	0.454
Tues.	7	5 4 4.84	10.323	22 49 56.6	+13.77	15 47.55	68.73	1 17.53	0.466
Wed.	8	5 8 12.73	10.334	22 55 15.3	12.77	15 47.45	68.77	1 6.23	0.477
Thur.	9	5 12 20.88	10.344	23 0 9.9	11.77	15 47.35	68.81	0 54.67	0.487
Frid.	10	5 16 29.27	10.353	23 4 40.2	+10.76	15 47.25	68.84	0 42.88	0.496
Sat.	11	5 20 37.87	10.362	23 8 46.1	9.75	15 47.15	68.87	0 30.87	0.505
SUN.	12	5 24 46.66	10.370	23 12 27.7	8.73	15 47.05	68.90	0 18.67	0.513
Mon.	13	5 28 55.64	10.377	23 15 44.9	+ 7.71	15 46.96	68.92	0 6.28	0.520
Tues.	14	5 33 4.78	10.383	23 18 37.6	6.68	15 46.87	68.94	0 6.26	0.526
Wed.	15	5 37 14.05	10.389	23 21 5.6	5.65	15 46.79	68.95	0 18.94	0.532
Thur.	16	5 41 23.44	10.393	23 23 8.9	+ 4.62	15 46.71	68.96	0 31.74	0.536
Frid.	17	5 45 32.93	10.397	23 24 47.6	3.59	15 46.64	68.97	0 44.64	0.540
Sat.	18	5 49 42.50	10.399	23 26 1.5	2.56	15 46.57	68.97	0 57.62	0.542
SUN.	19	5 53 52.12	10.401	23 26 50.6	+ 1.53	15 46.50	68.97	1 10.65	0.544
Mon.	20	5 58 1.77	10.401	23 27 14.9	+ 0.50	15 46.44	68.97	1 23.70	0.544
Tues.	21	6 2 11.43	10.401	23 27 14.4	− 0.54	15 46.38	68.97	1 36.76	0.544
Wed.	22	6 6 21.05	10.399	23 26 49.1	− 1.57	15 46.33	68.96	1 49.78	0.542
Thur.	23	6 10 30.61	10.397	23 25 58.9	2.61	15 46.28	68.95	2 2.75	0.540
Frid.	24	6 14 40.10	10.393	23 24 44.0	3.64	15 46.24	68.94	2 15.64	0.536
Sat.	25	6 18 49.48	10.388	23 23 4.3	− 4.67	15 46.21	68.92	2 28.43	0.531
SUN.	26	6 22 58.72	10.381	23 20 59.9	5.70	15 46.18	68.90	2 41.08	0.524
Mon.	27	6 27 7.80	10.374	23 18 30.8	6.72	15 46.16	68.87	2 53.57	0.517
Tues	28	6 31 16.68	10.365	23 15 37.1	− 7.74	15 46.14	68.84	3 5.86	0.508
Wed.	29	6 35 25.35	10.356	23 12 18.9	8.75	15 46.13	68.82	3 17.94	0.499
Thur.	30	6 39 33.78	10.345	23 8 36.3	9.77	15 46.12	68.79	3 29.77	0.488
Frid.	31	6 43 41.94	10.334	N.23 4 29.4	−10.78	15 46.12	68.75	3 41.34	0.477

NOTE.—The mean time of semidiameter passing may be found by subtracting 0ˢ.18 from the sidereal time.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign − indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	Equation of Time, to be Added to / Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	4 39 24.05	10.243	N.22 9 44.4	+19.69	2 19.18	0.387	4 41 43.23
Thur.	2	4 43 30.06	10.258	22 17 25.4	18.72	2 9.73	0.402	4 45 39.79
Frid.	3	4 47 36.43	10.272	22 24 43.0	17.74	1 59.92	0.416	4 49 36.35
Sat.	4	4 51 43.13	10.285	22 31 37.1	+16.76	1 49.78	0.429	4 53 32.91
SUN.	5	4 55 50.14	10.298	22 38 7.6	15.77	1 39.32	0.442	4 57 29.46
Mon.	6	4 59 57.46	10.310	22 44 14.2	14.78	1 28.56	0.454	5 1 26.02
Tues.	7	5 4 5.06	10.322	22 49 56.9	+13.78	1 17.52	0.466	5 5 22.58
Wed.	8	5 8 12.92	10.333	22 55 15.6	12.77	1 6.22	0.477	5 9 19.14
Thur.	9	5 12 21.04	10.343	23 0 10.1	11.77	0 54.66	0.487	5 13 15.70
Frid.	10	5 16 29.39	10.352	23 4 40.3	+10.76	0 42.87	0.496	5 17 12.26
Sat.	11	5 20 37.95	10.361	23 8 46.2	9.75	0 30.86	0.505	5 21 8.81
SUN.	12	5 24 46.71	10.369	23 12 27.8	8.73	0 18.66	0.513	5 25 5.37
Mon.	13	5 28 55.65	10.376	23 15 45.0	+ 7.71	0 6.28	0.520	5 29 1.93
Tues.	14	5 33 4.75	10.382	23 18 37.6	6.68	0 6.26	0.526	5 32 58.49
Wed.	15	5 37 13.99	10.388	23 21 5.6	5.65	0 18.94	0.532	5 36 55.05
Thur.	16	5 41 23.35	10.392	23 23 8.9	+ 4.62	0 31.74	0.536	5 40 51.61
Frid.	17	5 45 32.81	10.396	23 24 47.6	3.59	0 44.64	0.540	5 44 48.17
Sat.	18	5 49 42.34	10.398	23 26 1.5	2.56	0 57.61	0.542	5 48 44.73
SUN.	19	5 53 51.92	10.400	23 26 50.6	+ 1.53	1 10.64	0.544	5 52 41.28
Mon.	20	5 58 1.53	10.400	23 27 14.9	+ 0.50	1 23.69	0.544	5 56 37.84
Tues.	21	6 2 11.15	10.400	23 27 14.4	− 0.54	1 36.75	0.544	6 0 34.40
Wed.	22	6 6 20.73	10.398	23 26 49.1	− 1.57	1 49.77	0.542	6 4 30.96
Thur.	23	6 10 30.26	10.396	23 25 59.0	2.61	2 2.74	0.540	6 8 27.52
Frid.	24	6 14 39.71	10.392	23 24 44.1	3.64	2 15.63	0.536	6 12 24.08
Sat.	25	6 18 49.05	10.387	23 23 4.5	− 4.67	2 28.42	0.531	6 16 20.63
SUN.	26	6 22 58.26	10.380	23 21 0.1	5.70	2 41.07	0.524	6 20 17.19
Mon.	27	6 27 7.30	10.373	23 18 31.1	6.72	2 53.55	0.517	6 24 13.75
Tues.	28	6 31 16.15	10.364	23 15 37.5	− 7.74	3 5.84	0.508	6 28 10.31
Wed.	29	6 35 24.78	10.355	23 12 19.4	8.75	3 17.91	0.499	6 32 6.87
Thur.	30	6 39 33.17	10.344	23 8 36.9	9.77	3 29.74	0.488	6 36 3.43
Frid.	31	6 43 41.30	10.333	N.23 4 30.1	−10.78	3 41.31	0.477	6 39 59.99

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign − indicates that north declinations are decreasing.

Diff. for 1 hour,
$+9^s.8565$.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S						Mean Time of Sidereal Noon
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	153	71 24 5.8	23 57.9	143.65	+ 0.75	0.0062523	+24.5	19 15 7.02
2	154	72 21 32.8	21 24.7	143.60	0.71	0.0063101	23.7	19 11 11.11
3	155	73 18 58.5	18 50.2	143.55	0.64	0.0063660	22.9	19 7 15.19
4	156	74 16 23.0	16 14.5	143.50	+ 0.55	0.0064201	+22.2	19 3 19.27
5	157	75 13 46 4	13 37.7	143.45	0.44	0.0064727	21.6	18 59 23.36
6	158	76 11 8.7	10 59.8	143.41	0.32	0.0065238	21.0	18 55 27.45
7	159	77 8 29.9	8 20.8	143.37	+ 0.19	0.0065734	+20.4	18 51 31.54
8	160	78 5 50.1	5 40.9	143.33	+ 0.05	0.0066216	19.8	18 47 35.62
9	161	79 3 9.6	3 0.2	143.30	— 0.08	0.0066684	19.3	18 43 39.71
10	162	80 0 28.4	0 18.8	143.27	— 0.19	0.0067140	+18.7	18 39 43.80
11	163	80 57 46.4	57 36.7	143.24	0.28	0.0067583	18.2	18 35 47.88
12	164	81 55 3.8	54 53.9	143.22	0.35	0.0068012	17.6	18 31 51.97
13	165	82 52 20.6	52 10.5	143.20	— 0.39	0.0068426	+16.9	18 27 56.06
14	166	83 49 37.0	49 26.7	143.18	0.40	0.0068825	16.3	18 24 0.15
15	167	84 46 53.1	46 42.6	143.17	0.38	0.0069209	15.7	18 20 4.24
16	168	85 44 8.9	43 58.2	143.16	— 0.33	0.0069576	+14.9	18 16 8.32
17	169	86 41 24.5	41 13.6	143.15	0.25	0.0069925	14.1	18 12 12.41
18	170	87 38 39.8	38 28.7	143.14	0.14	0.0070254	13.2	18 8 16.50
19	171	88 35 54.9	35 43.6	143.13	— 0.02	0.0070562	+12.3	18 4 20.59
20	172	89 33 9.9	32 58.5	143.12	+ 0.11	0.0070846	11.3	18 0 24.67
21	173	90 30 24.8	30 13.2	143.12	0.24	0.0071106	10.3	17 56 28.76
22	174	91 27 39.4	27 27.6	143.11	+ 0.37	0.0071342	+ 9.3	17 52 32.85
23	175	92 24 53.8	24 41.8	143.10	0.49	0.0071552	8.2	17 48 36.94
24	176	93 22 8.0	21 55.8	143.09	0.60	0.0071736	7.1	17 44 41.02
25	177	94 19 22.0	19 9.6	143.08	+ 0.68	0.0071893	+ 6.0	17 40 45.11
26	178	95 16 35.7	16 23.1	143.07	0.74	0.0072023	4.9	17 36 49.20
27	179	96 13 49.1	13 36.3	143.06	0.77	0.0072128	3.8	17 32 53.29
28	180	97 11 2.2	10 49.2	143.05	+ 0.77	0.0072207	+ 2.8	17 28 57.37
29	181	98 8 15.0	8 1.8	143.03	0.73	0.0072261	1.8	17 25 1 46
30	182	99 5 27.5	5 14.1	143.02	0.66	0.0072291	+ 0.8	17 21 5.55
31	183	100 2 39.6	2 26.0	143.00	+ 0.58	0.0072298	— 0.1	17 17 9.64

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′, to the mean equinox of January $1^d.0$.

Diff. for 1 Hour,
— $9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 10.3	15 5.1	55 34.1	−1.69	55 14.9	−1.51	5 48.6	1.85	6.3
2	15 0.5	14 56.5	54 58.0	1.31	54 43.5	1.11	6 31.4	1.73	7.3
3	14 53.2	14 50.6	54 31.4	0.90	54 21.9	0.70	7 11.8	1.66	8.3
4	14 48.7	14 47.4	54 14.8	−0.49	54 10.2	−0.30	7 51.2	1.64	9.3
5	14 46.8	14 46.8	54 7.8	−0.11	54 7.7	+0.08	8 30.6	1.67	10.3
6	14 47.3	14 48.3	54 9.6	+0.25	54 13.5	0.40	9 11.1	1.74	11.3
7	14 49.9	14 51.9	54 19.2	+0.55	54 26.5	+0.67	9 54.0	1.84	12.3
8	14 54.3	14 57.0	54 35.3	0.79	54 45.3	0.88	10 39.8	1.98	13.3
9	15 0.0	15 3.3	54 56.4	0.97	55 8.4	1.04	11 29.0	2.12	14.3
10	15 6.8	15 10.5	55 21.3	+1.10	55 34 7	+1.14	12 21.5	2.24	15.3
11	15 14.2	15 18.2	55 48.6	1.18	56 3.0	1.21	13 16.4	2.31	16.3
12	15 22.2	15 26.2	56 17.7	1.24	56 32.5	1.25	14 12.2	2.31	17.3
13	15 30.3	15 34.4	56 47.6	+1.27	57 2.8	+1.27	15 7.1	2.25	18.3
14	15 38.6	15 42.7	57 18.0	1.28	57 33.3	1.28	16 0.0	2.16	19.3
15	15 46.9	15 51.0	57 48.6	1.27	58 3.8	1.27	16 50.7	2.07	20.3
16	15 55.2	15 59.2	58 18.9	+1.25	58 33.7	+1.21	17 39.5	2.01	21.3
17	16 3.1	16 6.8	58 48.0	1.17	59 1.8	1.12	18 27.3	2.00	22.3
18	16 10.4	16 13.6	59 14.7	1.04	59 26.6	0.94	19 15.4	2.04	23.3
19	16 16.4	16 18.8	59 37.0	+0.80	59 45.8	+0.65	20 5.4	2.15	24.3
20	16 20.7	16 21.9	59 52.6	0.48	59 57.1	+0.27	20 58.4	2.28	25.3
21	16 22.4	16 22.2	59 59.1	+0.05	59 58.2	−0.20	21 54.9	2.46	26.3
22	16 21.2	16 19.3	59 54.4	−0.45	59 47.5	−0.70	22 55.2	2.55	27.3
23	16 16.6	16 13.1	59 37.6	0.95	59 24.9	1.18	23 57.3	2.58	28.3
24	16 8.9	16 4.0	59 9.4	1.40	58 51.5	1.59	δ		29.3
25	15 58.6	15 52.7	58 31.5	−1.73	58 10.0	−1.84	0 59.1	2.51	0.9
26	15 46.6	15 40.2	57 47.4	1.92	57 24.1	1.95	1 57.7	2.34	1.9
27	15 33.8	15 27.6	57 0.6	1.95	56 37.5	1.90	2 51.6	2.14	2.9
28	15 21.5	15 15.7	56 15.1	−1.82	55 53.8	−1.71	3 40.6	1.96	3.9
29	15 10.2	15 5.3	55 33.9	1.58	55 15.8	1.43	4 25.7	1.81	4.9
30	15 0.9	14 57.2	54 59.7	1.25	54 45.9	1.05	5 7.6	1.71	5.9
31	14 54.1	14 51.7	54 34.6	−0.85	54 25.7	−0.64	5 47.7	1.66	6.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
	WEDNESDAY 1.					**FRIDAY 3.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 19 49.29	1.9888	N.15 51 38.6	11.900	0	11 49 46.51	1.7891	N. 5 34 33.3	13.475
1	10 21 48.44	1.9829	15 39 42.9	11.955	1	11 51 33.79	1.7868	5 21 4.4	13.488
2	10 23 47.24	1.9770	15 27 44.0	12.009	2	11 53 20.93	1.7846	5 7 34.7	13.501
3	10 25 45.68	1.9712	15 15 41.9	12.062	3	11 55 7.94	1.7825	4 54 4.3	13.512
4	10 27 43.78	1.9655	15 3 36.6	12.113	4	11 56 54.83	1.7805	4 40 33.2	13.523
5	10 29 41.54	1.9598	14 51 28.3	12.163	5	11 58 41.60	1.7785	4 27 1.5	13.533
6	10 31 38.96	1.9542	14 39 17.0	12.213	6	12 0 28.25	1.7767	4 13 29.2	13.543
7	10 33 36.04	1.9487	14 27 2.7	12.262	7	12 2 14.80	1.7749	3 59 56.3	13.552
8	10 35 32.80	1.9433	14 14 45.5	12.310	8	12 4 1.24	1.7732	3 46 23.0	13.559
9	10 37 29.24	1.9380	14 2 25.5	12.357	9	12 5 47.58	1.7716	3 32 49.2	13.566
10	10 39 25.36	1.9327	13 50 2.7	12.402	10	12 7 33.83	1.7700	3 19 15.0	13.573
11	10 41 21.16	1.9274	13 37 37.2	12.447	11	12 9 19.98	1.7684	3 5 40.4	13.580
12	10 43 16.65	1.9222	13 25 9.1	12.490	12	12 11 6.04	1.7670	2 52 5.4	13.586
13	10 45 11.83	1.9172	13 12 38.4	12.532	13	12 12 52.02	1.7658	2 38 30.1	13.590
14	10 47 6.71	1.9122	13 0 5.2	12.574	14	12 14 37.93	1.7646	2 24 54.6	13.593
15	10 49 1.30	1.9073	12 47 29.5	12.615	15	12 16 23.77	1.7634	2 11 18.9	13.597
16	10 50 55.59	1.9025	12 34 51.4	12.655	16	12 18 9.54	1.7623	1 57 43.0	13.600
17	10 52 49.60	1.8977	12 22 10.9	12.694	17	12 19 55.25	1.7612	1 44 6.9	13.602
18	10 54 43.32	1.8930	12 9 28.1	12.732	18	12 21 40.89	1.7602	1 30 30.7	13.603
19	10 56 36.76	1.8884	11 56 43.0	12.769	19	12 23 26.48	1.7594	1 16 54.5	13.604
20	10 58 29.93	1.8839	11 43 55.8	12.804	20	12 25 12.02	1.7587	1 3 18.2	13.605
21	11 0 22.83	1.8794	11 31 6.5	12.839	21	12 26 57.52	1.7580	0 49 41.9	13.604
22	11 2 15.46	1.8751	11 18 15.1	12.874	22	12 28 42.98	1.7573	0 36 5.7	13.603
23	11 4 7.84	1.8708	N.11 5 21.6	12.907	23	12 30 28.40	1.7567	N. 0 22 29.6	13.601
	THURSDAY 2.					**SATURDAY 4.**			
0	11 5 59.96	1.8666	N.10 52 26.2	12.939	0	12 32 13.79	1.7562	N. 0 8 53.6	13.598
1	11 7 51.83	1.8624	10 39 28.9	12.971	1	12 33 59.15	1.7558	S. 0 4 42.2	13.595
2	11 9 43.45	1.8583	10 26 29.7	13.002	2	12 35 44.49	1.7555	0 18 17.8	13.592
3	11 11 34.83	1.8544	10 13 28.7	13.032	3	12 37 29.81	1.7552	0 31 53.2	13.587
4	11 13 25.98	1.8506	10 0 25.9	13.061	4	12 39 15.12	1.7551	0 45 28.3	13.582
5	11 15 16.90	1.8467	9 47 21.4	13.089	5	12 41 0.42	1.7549	0 59 3.0	13.576
6	11 17 7.58	1.8429	9 34 15.2	13.116	6	12 42 45.71	1.7548	1 12 37.4	13.570
7	11 18 58.04	1.8392	9 21 7.4	13.142	7	12 44 31.00	1.7549	1 26 11.4	13.563
8	11 20 48.29	1.8357	9 7 58.1	13.168	8	12 46 16.30	1.7550	1 39 44.9	13.555
9	11 22 38.32	1.8322	8 54 47.2	13.194	9	12 48 1.60	1.7551	1 53 18.0	13.547
10	11 24 28.15	1.8287	8 41 34.8	13.218	10	12 49 46.91	1.7553	2 6 50.6	13.538
11	11 26 17.77	1.8253	8 28 21.0	13.241	11	12 51 32.24	1.7557	2 20 22.6	13.528
12	11 28 7.19	1.8221	8 15 5.9	13.264	12	12 53 17.60	1.7562	2 33 54.0	13.518
13	11 29 56.42	1.8189	8 1 49.4	13.286	13	12 55 2.99	1.7567	2 47 24.8	13.507
14	11 31 45.46	1.8158	7 48 31.6	13.307	14	12 56 48.40	1.7571	3 0 54.9	13.496
15	11 33 34.32	1.8128	7 35 12.6	13.327	15	12 58 33.84	1.7577	3 14 24.3	13.484
16	11 35 23.00	1.8098	7 21 52.4	13.346	16	13 0 19.32	1.7584	3 27 53.0	13.471
17	11 37 11.50	1.8069	7 8 31.1	13.364	17	13 2 4.85	1.7592	3 41 20.8	13.457
18	11 38 59.83	1.8041	6 55 8.7	13.382	18	13 3 50.43	1.7601	3 54 47.8	13.443
19	11 40 47.99	1.8014	6 41 45.2	13.400	19	13 5 36.06	1.7610	4 8 14.0	13.428
20	11 42 36.00	1.7988	6 28 20.7	13.417	20	13 7 21.75	1.7619	4 21 39.2	13.412
21	11 44 23.85	1.7962	6 14 55.2	13.433	21	13 9 7.49	1.7629	4 35 3.5	13.396
22	11 46 11.55	1.7937	6 1 28.7	13.448	22	13 10 53.30	1.7641	4 48 26.8	13.379
23	11 47 59.10	1.7913	5 48 1.4	13.462	23	13 12 39.18	1.7653	5 1 49.0	13.362
24	11 49 46.51	1.7891	N. 5 34 33.3	13.475	24	13 14 25.14	1.7666	S. 5 15 10.2	13.344

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 5.					**TUESDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	13 14 25.14	1.7666	S. 5 15 10.2	13.344	0	14 41 56.80	1.9048	S. 15 21 4.2	11.602
1	13 16 11.17	1.7678	5 28 30.3	13.325	1	14 43 51.22	1.9092	15 32 38.6	11.546
2	13 17 57.28	1.7692	5 41 49.2	13.305	2	14 45 45.90	1.9135	15 44 9.7	11.489
3	13 19 43.48	1.7707	5 55 6.9	13.285	3	14 47 40.84	1.9179	15 55 37.3	11.431
4	13 21 29.77	1.7723	6 8 23.4	13.264	4	14 49 36.05	1.9225	16 7 1.4	11.372
5	13 23 16.16	1.7739	6 21 38.6	13.243	5	14 51 31.54	1.9271	16 18 21.9	11.311
6	13 25 2.64	1.7756	6 34 52.6	13.222	6	14 53 27.30	1.9316	16 29 38.7	11.249
7	13 26 49.23	1.7773	6 48 5.2	13.198	7	14 55 23.33	1.9362	16 40 51.8	11.187
8	13 28 35.92	1.7791	7 1 16.4	13.174	8	14 57 19.65	1.9410	16 52 1.2	11.124
9	13 30 22.72	1.7810	7 14 26.1	13.149	9	14 59 16.25	1.9457	17 3 6.7	11.060
10	13 32 9.64	1.7830	7 27 34.3	13.124	10	15 1 13.14	1.9505	17 14 8.4	10.996
11	13 33 56.68	1.7850	7 40 41.0	13.099	11	15 3 10.31	1.9553	17 25 6.2	10.929
12	13 35 43.84	1.7871	7 53 46.2	13.073	12	15 5 7.77	1.9602	17 35 59.9	10.862
13	13 37 31.13	1.7893	8 6 49.8	13.046	13	15 7 5.53	1.9651	17 46 49.6	10.794
14	13 39 18.55	1.7915	8 19 51.7	13.017	14	15 9 3.58	1.9699	17 57 35.2	10.726
15	13 41 6.11	1.7938	8 32 51.8	12.987	15	15 11 1.92	1.9748	18 8 16.7	10.656
16	13 42 53.80	1.7961	8 45 50.2	12.958	16	15 13 0.56	1.9799	18 18 53.9	10.584
17	13 44 41.64	1.7986	8 58 46.8	12.929	17	15 14 59.51	1.9850	18 29 26.8	10.512
18	13 46 29.63	1.8011	9 11 41.7	12.899	18	15 16 58.76	1.9901	18 39 55.4	10.440
19	13 48 17.77	1.8037	9 24 34.7	12.867	19	15 18 58.32	1.9952	18 50 19.6	10.366
20	13 50 6.07	1.8063	9 37 25.7	12.834	20	15 20 58.19	2.0003	19 0 39.3	10.291
21	13 51 54.52	1.8089	9 50 14.8	12.801	21	15 22 58.36	2.0055	19 10 54.5	10.215
22	13 53 43.14	1.8117	10 3 1.9	12.768	22	15 24 58.85	2.0108	19 21 5.1	10.138
23	13 55 31.93	1.8145	S. 10 15 46.9	12.733	23	15 26 59.66	2.0161	S. 19 31 11.1	10.060
	MONDAY 6.					**WEDNESDAY 8.**			
0	13 57 20.88	1.8173	S. 10 28 29.8	12.698	0	15 29 0.78	2.0214	S. 19 41 12.3	9.980
1	13 59 10.01	1.8203	10 41 10.6	12.662	1	15 31 2.22	2.0267	19 51 8.7	9.900
2	14 0 59.32	1.8233	10 53 49.2	12.624	2	15 33 3.98	2.0320	20 1 0.3	9.820
3	14 2 48.81	1.8264	11 6 25.5	12.586	3	15 35 6.06	2.0373	20 10 47.1	9.738
4	14 4 38.49	1.8296	11 18 59.5	12.547	4	15 37 8.46	2.0427	20 20 28.9	9.654
5	14 6 28.36	1.8328	11 31 31.2	12.508	5	15 39 11.18	2.0481	20 30 5.6	9.569
6	14 8 18.42	1.8360	11 44 0.5	12.468	6	15 41 14.23	2.0535	20 39 37.2	9.484
7	14 10 8.68	1.8393	11 56 27.4	12.427	7	15 43 17.60	2.0589	20 49 3.7	9.397
8	14 11 59.14	1.8427	12 8 51.8	12.386	8	15 45 21.30	2.0644	20 58 24.9	9.309
9	14 13 49.81	1.8462	12 21 13.7	12.343	9	15 47 25.33	2.0699	21 7 40.8	9.221
10	14 15 40.68	1.8497	12 33 33.0	12.300	10	15 49 29.69	2.0754	21 16 51.4	9.132
11	14 17 31.77	1.8532	12 45 49.7	12.256	11	15 51 34.38	2.0809	21 25 56.6	9.041
12	14 19 23.07	1.8568	12 58 3.7	12.211	12	15 53 39.40	2.0864	21 34 56.3	8.948
13	14 21 14.59	1.8606	13 10 15.0	12.165	13	15 55 44.75	2.0919	21 43 50.4	8.855
14	14 23 6.34	1.8643	13 22 23.5	12.118	14	15 57 50.43	2.0975	21 52 38.9	8.762
15	14 24 58.31	1.8681	13 34 29.2	12.071	15	15 59 56.45	2.1031	22 1 21.8	8.667
16	14 26 50.51	1.8720	13 46 32.0	12.022	16	16 2 2.80	2.1086	22 9 58.9	8.570
17	14 28 42.95	1.8759	13 58 31.9	11.972	17	16 4 9.48	2.1141	22 18 30.2	8.473
18	14 30 35.62	1.8798	14 10 28.7	11.922	18	16 6 16.49	2.1197	22 26 55.7	8.375
19	14 32 28.53	1.8839	14 22 22.5	11.872	19	16 8 23.84	2.1252	22 35 15.2	8.275
20	14 34 21.69	1.8880	14 34 13.3	11.820	20	16 10 31.52	2.1307	22 43 28.7	8.174
21	14 36 15.09	1.8921	14 46 0.9	11.767	21	16 12 39.53	2.1362	22 51 36.1	8.072
22	14 38 8.74	1.8962	14 57 45.3	11.712	22	16 14 47.87	2.1418	22 59 37.4	7.970
23	14 40 2.64	1.9005	15 9 26.4	11.657	23	16 16 56.55	2.1474	23 7 32.5	7.867
24	14 41 56.80	1.9048	S. 15 21 4.2	11.602	24	16 19 5.56	2.1529	S. 23 15 21.4	7.762

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 19 5.56	2.1529	S.23 15 21.4	7.762
1	16 21 14.90	2.1584	23 23 4.0	7.656
2	16 23 24.57	2.1639	23 30 40.1	7.548
3	16 25 34.57	2.1694	23 38 9.7	7.439
4	16 27 44.90	2.1748	23 45 32.8	7.331
5	16 29 55.55	2.1802	23 52 49.4	7.221
6	16 32 6.53	2.1857	23 59 59.3	7.109
7	16 34 17.83	2.1911	24 7 2.5	6.997
8	16 36 29.46	2.1965	24 13 58.9	6.883
9	16 38 41.41	2.2018	24 20 48.4	6.768
10	16 40 53.68	2.2071	24 27 31.0	6.653
11	16 43 6.27	2.2124	24 34 6.7	6.537
12	16 45 19.17	2.2177	24 40 35.4	6.419
13	16 47 32.39	2.2229	24 46 57.0	6.300
14	16 49 45.92	2.2281	24 53 11.4	6.180
15	16 51 59.76	2.2332	24 59 18.6	6.059
16	16 54 13.90	2.2383	25 5 18.5	5.937
17	16 56 28.35	2.2434	25 11 11.1	5.815
18	16 58 43.11	2.2485	25 16 56.3	5.691
19	17 0 58.17	2.2534	25 22 34.0	5.566
20	17 3 13.52	2.2582	25 28 4.2	5.441
21	17 5 29.16	2.2631	25 33 26.9	5.314
22	17 7 45.09	2.2679	25 38 41.9	5.186
23	17 10 1.31	2.2727	S.25 43 49.2	5.057

FRIDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 12 17.82	2.2775	S.25 48 48.7	4.927
1	17 14 34.61	2.2821	25 53 40.4	4.797
2	17 16 51.67	2.2867	25 58 24.3	4.666
3	17 19 9.01	2.2912	26 3 0.3	4.533
4	17 21 26.61	2.2956	26 7 28.3	4.400
5	17 23 44.48	2.3000	26 11 48.3	4.267
6	17 26 2.61	2.3043	26 16 0.3	4.132
7	17 28 20.99	2.3085	26 20 4.1	3.995
8	17 30 39.63	2.3127	26 23 59.7	3.858
9	17 32 58.52	2.3168	26 27 47.1	3.721
10	17 35 17.65	2.3208	26 31 26.2	3.582
11	17 37 37.01	2.3247	26 34 57.0	3.443
12	17 39 56.61	2.3286	26 38 19.4	3.303
13	17 42 16.44	2.3323	26 41 33.4	3.163
14	17 44 36.49	2.3360	26 44 38.9	3.022
15	17 46 56.76	2.3396	26 47 36.0	2.880
16	17 49 17.24	2.3431	26 50 24.5	2.737
17	17 51 37.93	2.3466	26 53 4.4	2.593
18	17 53 58.83	2.3499	26 55 35.7	2.449
19	17 56 19.92	2.3531	26 57 58.3	2.304
20	17 58 41.20	2.3562	27 0 12.2	2.159
21	18 1 2.67	2.3593	27 2 17.4	2.013
22	18 3 24.32	2.3622	27 4 13.8	1.866
23	18 5 46.14	2.3651	27 6 1.3	1.719
24	18 8 8.13	2.3678	S.27 7 40.0	1.571

SATURDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	18 8 8.13	2.3678	S.27 7 40.0	1.571
1	18 10 30.28	2.3705	27 9 9.8	1.422
2	18 12 52.59	2.3731	27 10 30.7	1.273
3	18 15 15.05	2.3755	27 11 42.6	1.124
4	18 17 37.65	2.3778	27 12 45.6	0.975
5	18 20 0.39	2.3801	27 13 39.6	0.824
6	18 22 23.27	2.3823	27 14 24.5	0.673
7	18 24 46.27	2.3843	27 15 0.4	0.522
8	18 27 9.39	2.3863	27 15 27.2	0.371
9	18 29 32.63	2.3882	27 15 44.9	0.219
10	18 31 55.97	2.3898	27 15 53.5	− 0.067
11	18 34 19.41	2.3914	27 15 52.9	+ 0.086
12	18 36 42.94	2.3929	27 15 43.1	0.239
13	18 39 6.56	2.3943	27 15 24.2	0.392
14	18 41 30.26	2.3956	27 14 56.1	0.546
15	18 43 54.03	2.3967	27 14 18.7	0.700
16	18 46 17.87	2.3978	27 13 32.1	0.853
17	18 48 41.77	2.3988	27 12 36.3	1.007
18	18 51 5.73	2.3997	27 11 31.3	1.161
19	18 53 29.73	2.4004	27 10 17.0	1.315
20	18 55 53.77	2.4010	27 8 53.5	1.469
21	18 58 17.85	2.4015	27 7 20.7	1.624
22	19 0 41.95	2.4018	27 5 38.6	1.779
23	19 3 6.07	2.4021	S.27 3 47.2	1.933

SUNDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	19 5 30.21	2.4023	S.27 1 46.6	2.087
1	19 7 54.35	2.4024	26 59 36.7	2.242
2	19 10 18.50	2.4024	26 57 17.5	2.397
3	19 12 42.64	2.4022	26 54 49.1	2.551
4	19 15 6.77	2.4020	26 52 11.4	2.706
5	19 17 30.88	2.4017	26 49 24.4	2.860
6	19 19 54.97	2.4013	26 46 28.2	3.014
7	19 22 19.03	2.4007	26 43 22.7	3.168
8	19 24 43.05	2.3999	26 40 8.0	3.322
9	19 27 7.02	2.3991	26 36 44.1	3.475
10	19 29 30.94	2.3982	26 33 11.0	3.628
11	19 31 54.81	2.3973	26 29 28.7	3.782
12	19 34 18.62	2.3962	26 25 37.2	3.935
13	19 36 42.36	2.3951	26 21 36.5	4.087
14	19 39 6.03	2.3938	26 17 26.7	4.239
15	19 41 29.62	2.3924	26 13 7.8	4.391
16	19 43 53.12	2.3910	26 8 39.8	4.542
17	19 46 16.54	2.3895	26 4 2.7	4.693
18	19 48 39.86	2.3878	25 59 16.6	4.844
19	19 51 3.08	2.3861	25 54 21.4	4.995
20	19 53 26.19	2.3842	25 49 17.2	5.144
21	19 55 49.19	2.3823	25 44 4.1	5.293
22	19 58 12.07	2.3803	25 38 42.0	5.442
23	20 0 34.83	2.3783	25 33 11.0	5.590
24	20 2 57.47	2.3762	S.25 27 31.2	5.737

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 13.					WEDNESDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	20 2 57.47	2.3762	S. 25 27 31.2	5.737	0	21 53 28.88	2.2179	S. 18 16 9.8	11.882
1	20 5 19.98	2.3740	25 21 42.5	5.885	1	21 55 41.85	2.2143	18 4 13.8	11.985
2	20 7 42.35	2.3716	25 15 45.0	6.032	2	21 57 54.60	2.2107	17 52 11.6	12.087
3	20 10 4.57	2.3692	25 9 38.6	6.179	3	22 0 7.14	2.2072	17 40 3.3	12.188
4	20 12 26.65	2.3667	25 3 23.5	6.324	4	22 2 19.47	2.2037	17 27 49.0	12.287
5	20 14 48.58	2.3642	24 56 59.7	6.468	5	22 4 31.59	2.2002	17 15 28.8	12.386
6	20 17 10.36	2.3617	24 50 27.3	6.612	6	22 6 43.50	2.1968	17 3 2.7	12.484
7	20 19 31.98	2.3590	24 43 46.2	6.756	7	22 8 55.21	2.1935	16 50 30.7	12.581
8	20 21 53.44	2.3562	24 36 56.5	6.899	8	22 11 6.72	2.1901	16 37 53.0	12.676
9	20 24 14.73	2.3534	24 29 58.3	7.041	9	22 13 18.02	2.1867	16 25 9.6	12.770
10	20 26 35.85	2.3506	24 22 51.6	7.182	10	22 15 29.12	2.1834	16 12 20.6	12.862
11	20 28 56.80	2.3477	24 15 36.5	7.322	11	22 17 40.03	2.1802	15 59 26.1	12.954
12	20 31 17.57	2.3447	24 8 12.9	7.462	12	22 19 50.74	2.1769	15 46 26.1	13.045
13	20 33 38.16	2.3417	24 0 41.0	7.601	13	22 22 1.26	2.1737	15 33 20.7	13.134
14	20 35 58.57	2.3386	23 53 0.8	7.739	14	22 24 11.59	2.1706	15 20 10.0	13.222
15	20 38 18.79	2.3354	23 45 12.3	7.877	15	22 26 21.73	2.1675	15 6 54.0	13.310
16	20 40 38.82	2.3322	23 37 15.6	8.013	16	22 28 31.69	2.1644	14 53 32.8	13.396
17	20 42 58.66	2.3291	23 29 10.7	8.149	17	22 30 41.46	2.1613	14 40 6.5	13.480
18	20 45 18.31	2.3258	23 20 57.7	8.283	18	22 32 51.05	2.1584	14 26 35.2	13.563
19	20 47 37.76	2.3225	23 12 36.7	8.417	19	22 35 0.47	2.1555	14 12 58.9	13.646
20	20 49 57.01	2.3191	23 4 7.6	8.551	20	22 37 9.71	2.1526	13 59 17.7	13.728
21	20 52 16.05	2.3157	22 55 30.5	8.684	21	22 39 18.78	2.1498	13 45 31.6	13.808
22	20 54 34.89	2.3122	22 46 45.5	8.816	22	22 41 27.69	2.1471	13 31 40.8	13.886
23	20 56 53.52	2.3088	S. 22 37 52.6	8.946	23	22 43 36.43	2.1444	S. 13 17 45.3	13.962
	TUESDAY 14.					THURSDAY 16.			
0	20 59 11.95	2.3054	S. 22 28 52.0	9.075	0	22 45 45.01	2.1417	S. 13 3 45.3	14.038
1	21 1 30.17	2.3019	22 19 43.6	9.204	1	22 47 53.43	2.1391	12 49 40.7	14.114
2	21 3 48.17	2.2983	22 10 27.5	9.332	2	22 50 1.70	2.1366	12 35 31.6	14.187
3	21 6 5.96	2.2947	22 1 3.8	9.458	3	22 52 9.82	2.1341	12 21 18.2	14.259
4	21 8 23.53	2.2911	21 51 32.5	9.584	4	22 54 17.79	2.1317	12 7 0.5	14.331
5	21 10 40.89	2.2875	21 41 53.7	9.709	5	22 56 25.62	2.1293	11 52 38.5	14.402
6	21 12 58.03	2.2838	21 32 7.4	9.833	6	22 58 33.30	2.1269	11 38 12.2	14.471
7	21 15 14.95	2.2802	21 22 13.7	9.956	7	23 0 40.85	2.1247	11 23 41.9	14.538
8	21 17 31.65	2.2766	21 12 12.7	10.077	8	23 2 48.27	2.1226	11 9 7.6	14.604
9	21 19 48.14	2.2729	21 2 4.4	10.198	9	23 4 55.56	2.1205	10 54 29.4	14.669
10	21 22 4.40	2.2692	20 51 48.9	10.318	10	23 7 2.73	2.1184	10 39 47.3	14.733
11	21 24 20.44	2.2655	20 41 26.2	10.437	11	23 9 9.77	2.1163	10 25 1.4	14.797
12	21 26 36.26	2.2618	20 30 56.4	10.555	12	23 11 16.69	2.1144	10 10 11.7	14.858
13	21 28 51.86	2.2581	20 20 19.6	10.671	13	23 13 23.50	2.1126	9 55 18.4	14.918
14	21 31 7.24	2.2544	20 9 35.9	10.787	14	23 15 30.21	2.1109	9 40 21.5	14.977
15	21 33 22.39	2.2507	19 58 45.2	10.902	15	23 17 36.81	2.1092	9 25 21.2	15.034
16	21 35 37.32	2.2471	19 47 47.7	11.015	16	23 19 43.31	2.1076	9 10 17.5	15.090
17	21 37 52.04	2.2434	19 36 43.4	11.127	17	23 21 49.72	2.1060	8 55 10.4	15.146
18	21 40 6.53	2.2397	19 25 32.5	11.238	18	23 23 56.03	2.1045	8 40 0.0	15.200
19	21 42 20.80	2.2361	19 14 14.9	11.348	19	23 26 2.26	2.1031	8 24 46.4	15.252
20	21 44 34.86	2.2324	19 2 50.7	11.457	20	23 28 8.40	2.1017	8 9 29.7	15.303
21	21 46 48.69	2.2287	18 51 20.1	11.564	21	23 30 14.46	2.1004	7 54 10.0	15.353
22	21 49 2.30	2.2251	18 39 43.1	11.671	22	23 32 20.45	2.0993	7 38 47.4	15.402
23	21 51 15.70	2.2215	18 27 59.6	11.777	23	23 34 26.38	2.0982	7 23 21.8	15.450
24	21 53 28.88	2.2179	S. 18 16 9.8	11.682	24	23 36 32.24	2.0972	S. 7 7 53.4	15.496

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 36 32.24	2.0972	S. 7 7 53.4	15.496
1	23 38 38.04	2.0962	6 52 22.3	15.541
2	23 40 43.79	2.0953	6 36 48.5	15.585
3	23 42 49.48	2.0945	6 21 12.1	15.627
4	23 44 55.13	2.0938	6 5 33.2	15.668
5	23 47 0.74	2.0932	5 49 51.9	15.707
6	23 49 6.31	2.0926	5 34 8.3	15.746
7	23 51 11.85	2.0921	5 18 22.4	15.784
8	23 53 17.36	2.0917	5 2 34.2	15.820
9	23 55 22.85	2.0913	4 46 44.0	15.854
10	23 57 28.32	2.0912	4 30 51.8	15.887
11	23 59 33.79	2.0911	4 14 57.6	15.919
12	0 1 39.25	2.0909	3 59 1.5	15.950
13	0 3 44.70	2.0909	3 43 3.6	15.979
14	0 5 50.16	2.0911	3 27 4.0	16.007
15	0 7 55.63	2.0913	3 11 2.8	16.033
16	0 10 1.11	2.0915	2 55 0.0	16.059
17	0 12 6.61	2.0919	2 38 55.7	16.082
18	0 14 12.14	2.0924	2 22 50.1	16.104
19	0 16 17.70	2.0929	2 6 43.2	16.126
20	0 18 23.29	2.0934	1 50 35.0	16.147
21	0 20 28.91	2.0941	1 34 25.6	16.165
22	0 22 34.58	2.0949	1 18 15.2	16.182
23	0 24 40.30	2.0958	S. 1 2 3.8	16.198

SATURDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	0 26 46.08	2.0968	S. 0 45 51.5	16.212
1	0 28 51.92	2.0978	0 29 38.4	16.224
2	0 30 57.82	2.0989	S. 0 13 24.6	16.236
3	0 33 3.79	2.1001	N. 0 2 49.9	16.247
4	0 35 9.83	2.1014	0 19 5.0	16.255
5	0 37 15.96	2.1029	0 35 20.5	16.262
6	0 39 22.18	2.1044	0 51 36.4	16.268
7	0 41 28.49	2.1059	1 7 52.6	16.272
8	0 43 34.89	2.1075	1 24 9.0	16.275
9	0 45 41.39	2.1093	1 40 25.6	16.277
10	0 47 48.00	2.1112	1 56 42.2	16.276
11	0 49 54.73	2.1131	2 12 58.7	16.274
12	0 52 1.57	2.1150	2 29 15.1	16.272
13	0 54 8.53	2.1172	2 45 31.3	16.268
14	0 56 15.63	2.1194	3 1 47.2	16.262
15	0 58 22.86	2.1217	3 18 2.7	16.254
16	1 0 30.23	2.1240	3 34 17.7	16.245
17	1 2 37.74	2.1264	3 50 32.1	16.234
18	1 4 45.40	2.1290	4 6 45.8	16.222
19	1 6 53.22	2.1316	4 22 58.8	16.209
20	1 9 1.19	2.1343	4 39 10.9	16.194
21	1 11 9.33	2.1371	4 55 22.1	16.177
22	1 13 17.64	2.1399	5 11 32.2	16.159
23	1 15 26.12	2.1429	5 27 41.2	16.140
24	1 17 34.79	2.1460	N. 5 43 49.0	16.119

SUNDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 17 34.79	2.1460	N. 5 43 49.0	16.119
1	1 19 43.64	2.1491	5 59 55.5	16.096
2	1 21 52.68	2.1523	6 16 0.5	16.071
3	1 24 1.92	2.1556	6 32 4.0	16.045
4	1 26 11.36	2.1590	6 48 5.9	16.017
5	1 28 21.00	2.1625	7 4 6.1	15.989
6	1 30 30.86	2.1661	7 20 4.6	15.959
7	1 32 40.93	2.1698	7 36 1.2	15.926
8	1 34 51.23	2.1735	7 51 55.7	15.891
9	1 37 1.75	2.1772	8 7 48.1	15.855
10	1 39 12.50	2.1811	8 23 38.3	15.818
11	1 41 23.48	2.1850	8 39 26.3	15.780
12	1 43 34.70	2.1890	8 55 11.9	15.739
13	1 45 46.16	2.1932	9 10 55.0	15.697
14	1 47 57.88	2.1974	9 26 35.5	15.653
15	1 50 9.85	2.2017	9 42 13.3	15.607
16	1 52 22.08	2.2060	9 57 48.3	15.559
17	1 54 34.57	2.2103	10 13 20.4	15.510
18	1 56 47.32	2.2148	10 28 49.5	15.459
19	1 59 0.35	2.2195	10 44 15.5	15.407
20	2 1 13.66	2.2241	10 59 38.3	15.353
21	2 3 27.24	2.2288	11 14 57.8	15.297
22	2 5 41.11	2.2336	11 30 13.9	15.238
23	2 7 55.27	2.2384	N. 11 45 26.4	15.178

MONDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 10 9.72	2.2433	N. 12 0 35.3	15.117
1	2 12 24.47	2.2483	12 15 40.5	15.054
2	2 14 39.52	2.2533	12 30 41.8	14.989
3	2 16 54.87	2.2584	12 45 39.2	14.922
4	2 19 10.53	2.2636	13 0 32.5	14.854
5	2 21 26.50	2.2688	13 15 21.7	14.784
6	2 23 42.79	2.2741	13 30 6.6	14.712
7	2 25 59.40	2.2795	13 44 47.1	14.638
8	2 28 16.33	2.2848	13 59 23.1	14.563
9	2 30 33.58	2.2902	14 13 54.6	14.486
10	2 32 51.16	2.2957	14 28 21.4	14.406
11	2 35 9.07	2.3013	14 42 43.3	14.324
12	2 37 27.32	2.3070	14 57 0.3	14.242
13	2 39 45.91	2.3126	15 11 12.3	14.157
14	2 42 4.83	2.3182	15 25 19.1	14.070
15	2 44 24.09	2.3239	15 39 20.7	13.982
16	2 46 43.70	2.3297	15 53 16.9	13.891
17	2 49 3.66	2.3355	16 7 7.6	13.799
18	2 51 23.96	2.3413	16 20 52.8	13.706
19	2 53 44.61	2.3472	16 34 32.3	13.610
20	2 56 5.62	2.3532	16 48 6.0	13.512
21	2 58 26.99	2.3592	17 1 33.7	13.412
22	3 0 48.72	2.3651	17 14 55.4	13.311
23	3 3 10.80	2.3710	17 28 11.0	13.207
24	3 5 33.24	2.3770	N. 17 41 20.3	13.102

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	3 5 33.24	2.3770	N.17 41 20.3	13.102
1	3 7 56.04	2.3830	17 54 23.3	12.996
2	3 10 19.20	2.3891	18 7 19.8	12.887
3	3 12 42.73	2.3952	18 20 9.7	12.776
4	3 15 6.62	2.4012	18 32 52.9	12.663
5	3 17 30.87	2.4072	18 45 29.3	12.549
6	3 19 55.49	2.4133	18 57 58.8	12.433
7	3 22 20.47	2.4193	19 10 21.3	12.315
8	3 24 45.81	2.4254	19 22 36.6	12.195
9	3 27 11.52	2.4315	19 34 44.7	12.074
10	3 29 37.59	2.4376	19 46 45.5	11.951
11	3 32 4.03	2.4437	19 58 38.8	11.825
12	3 34 30.83	2.4497	20 10 24.5	11.697
13	3 36 57.99	2.4557	20 22 2.5	11.569
14	3 39 25.51	2.4617	20 33 32.8	11.439
15	3 41 53.39	2.4677	20 44 55.2	11.307
16	3 44 21.63	2.4736	20 56 9.6	11.173
17	3 46 50.22	2.4794	21 7 15.9	11.037
18	3 49 19.16	2.4853	21 18 14.0	10.899
19	3 51 48.46	2.4912	21 29 3.8	10.760
20	3 54 18.11	2.4970	21 39 45.2	10.619
21	3 56 48.10	2.5027	21 50 18.1	10.477
22	3 59 18.44	2.5085	22 0 42.4	10.332
23	4 1 49.12	2.5142	N.22 10 58.0	10.186

WEDNESDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	4 4 20.14	2.5198	N.22 21 4.7	10.038
1	4 6 51.50	2.5253	22 31 2.5	9.889
2	4 9 23.18	2.5308	22 40 51.4	9.739
3	4 11 55.19	2.5362	22 50 31.2	9.587
4	4 14 27.52	2.5415	23 0 1.8	9.433
5	4 17 0.17	2.5468	23 9 23.1	9.278
6	4 19 33.14	2.5521	23 18 35.1	9.121
7	4 22 6.42	2.5572	23 27 37.6	8.962
8	4 24 40.00	2.5622	23 36 30.5	8.802
9	4 27 13.88	2.5671	23 45 13.8	8.641
10	4 29 48.05	2.5720	23 53 47.4	8.478
11	4 32 22.52	2.5768	24 2 11.2	8.314
12	4 34 57.27	2.5814	24 10 25.1	8.149
13	4 37 32.29	2.5860	24 18 29.1	7.982
14	4 40 7.59	2.5905	24 26 23.0	7.814
15	4 42 43.15	2.5948	24 34 6.8	7.645
16	4 45 18.97	2.5991	24 41 40.4	7.474
17	4 47 55.04	2.6032	24 49 3.7	7.302
18	4 50 31.35	2.6072	24 56 16.7	7.130
19	4 53 7.90	2.6111	25 3 19.3	6.956
20	4 55 44.68	2.6147	25 10 11.4	6.781
21	4 58 21.67	2.6183	25 16 53.0	6.605
22	5 0 58.88	2.6219	25 23 24.0	6.428
23	5 3 36.30	2.6252	25 29 44.3	6.250
24	5 6 13.91	2.6284	N.25 35 54.0	6.072

THURSDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	5 6 13.91	2.6284	N.25 35 54.0	6.072
1	5 8 51.71	2.6315	25 41 52.9	5.891
2	5 11 29.69	2.6345	25 47 40.9	5.709
3	5 14 7.85	2.6373	25 53 18.0	5.528
4	5 16 46.17	2.6399	25 58 44.2	5.346
5	5 19 24.64	2.6423	26 3 59.5	5.163
6	5 22 3.25	2.6447	26 9 3.8	4.979
7	5 24 42.00	2.6469	26 13 57.0	4.794
8	5 27 20.88	2.6489	26 18 39.1	4.609
9	5 29 59.87	2.6507	26 23 10.1	4.423
10	5 32 38.97	2.6524	26 27 29.9	4.237
11	5 35 18.16	2.6539	26 31 38.5	4.050
12	5 37 57.44	2.6553	26 35 35.9	3.862
13	5 40 36.80	2.6566	26 39 22.0	3.674
14	5 43 16.23	2.6576	26 42 56.8	3.487
15	5 45 55.71	2.6584	26 46 20.4	3.299
16	5 48 35.24	2.6591	26 49 32.7	3.110
17	5 51 14.80	2.6596	26 52 33.6	2.920
18	5 53 54.39	2.6599	26 55 23.1	2.731
19	5 56 33.99	2.6601	26 58 1.3	2.542
20	5 59 13.60	2.6601	27 0 28.2	2.353
21	6 1 53.20	2.6599	27 2 43.7	2.163
22	6 4 32.79	2.6596	27 4 47.8	1.973
23	6 7 12.35	2.6589	N.27 6 40.5	1.784

FRIDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	6 9 51.86	2.6581	N.27 8 21.9	1.595
1	6 12 31.32	2.6572	27 9 51.9	1.406
2	6 15 10.73	2.6562	27 11 10.6	1.217
3	6 17 50.07	2.6550	27 12 17.9	1.028
4	6 20 29.33	2.6536	27 13 13.9	0.839
5	6 23 8.50	2.6519	27 13 58.6	0.651
6	6 25 47.56	2.6501	27 14 32.0	0.463
7	6 28 26.51	2.6482	27 14 54.1	0.275
8	6 31 5.34	2.6460	27 15 5.0	+ 0.088
9	6 33 44.03	2.6437	27 15 4.7	− 0.098
10	6 36 22.58	2.6412	27 14 53.2	0.285
11	6 39 0.98	2.6386	27 14 30.5	0.471
12	6 41 39.21	2.6357	27 13 56.7	0.656
13	6 44 17.27	2.6327	27 13 11.8	0.840
14	6 46 55.14	2.6296	27 12 15.9	1.024
15	6 49 32.82	2.6262	27 11 8.9	1.207
16	6 52 10.29	2.6227	27 9 51.0	1.389
17	6 54 47.55	2.6191	27 8 22.2	1.570
18	6 57 24.58	2.6153	27 6 42.6	1.750
19	7 0 1.38	2.6113	27 4 52.2	1.930
20	7 2 37.94	2.6072	27 2 51.0	2.110
21	7 5 14.24	2.6029	27 0 39.0	2.288
22	7 7 50.28	2.5985	26 58 16.4	2.465
23	7 10 26.06	2.5940	26 55 43.2	2.641
24	7 13 1.56	2.5892	N.26 52 59.5	2.816

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
	SATURDAY 25.					**MONDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 13 1.56	2.5892	N.26 52 59.5	2.816	0	9 9 55.08	2.2577	N.21 41 37.0	9.575
1	7 15 36.77	2.5843	26 50 5.3	2.990	1	9 12 10.31	2.2500	21 31 59.4	9.677
2	7 18 11.68	2.5793	26 47 0.7	3.162	2	9 14 25.08	2.2422	21 22 15.7	9.779
3	7 20 46.29	2.5742	26 43 45.8	3.333	3	9 16 39.38	2.2345	21 12 25.9	9.879
4	7 23 20.59	2.5690	26 40 20.7	3.504	4	9 18 53.22	2.2268	21 2 30.2	9.977
5	7 25 54.57	2.5636	26 36 45.3	3.674	5	9 21 6.60	2.2192	20 52 28.7	10.073
6	7 28 28.22	2.5581	26 32 59.8	3.842	6	9 23 19.52	2.2115	20 42 21.5	10.167
7	7 31 1.54	2.5525	26 29 4.2	4.009	7	9 25 31.98	2.2039	20 32 8.7	10.260
8	7 33 34.52	2.5467	26 24 58.7	4.174	8	9 27 43.99	2.1964	20 21 50.3	10.352
9	7 36 7.14	2.5408	26 20 43.3	4.338	9	9 29 55.55	2.1888	20 11 26.5	10.442
10	7 38 39.41	2.5348	26 16 18.1	4.502	10	9 32 6.65	2.1813	20 0 57.3	10.530
11	7 41 11.32	2.5287	26 11 43.1	4.663	11	9 34 17.30	2.1738	19 50 22.9	10.617
12	7 43 42.86	2.5225	26 6 58.5	4.823	12	9 36 27.51	2.1664	19 39 43.3	10.703
13	7 46 14.02	2.5162	26 2 4.3	4.982	13	9 38 37.27	2.1590	19 28 58.6	10.787
14	7 48 44.80	2.5098	25 57 0.6	5.140	14	9 40 46.59	2.1517	19 18 8.9	10.869
15	7 51 15.20	2.5033	25 51 47.5	5.296	15	9 42 55.47	2.1443	19 7 14.3	10.950
16	7 53 45.20	2.4967	25 46 25.1	5.451	16	9 45 3.91	2.1370	18 56 14.9	11.029
17	7 56 14.81	2.4901	25 40 53.4	5.604	17	9 47 11.91	2.1297	18 45 10.8	11.108
18	7 58 44.01	2.4833	25 35 12.6	5.756	18	9 49 19.48	2.1226	18 34 2.0	11.185
19	8 1 12.80	2.4764	25 29 22.7	5.906	19	9 51 26.62	2.1155	18 22 48.6	11.260
20	8 3 41.18	2.4695	25 23 23.9	6.054	20	9 53 33.34	2.1084	18 11 30.8	11.333
21	8 6 9.14	2.4625	25 17 16.2	6.202	21	9 55 39.63	2.1013	18 0 8.6	11.406
22	8 8 36.68	2.4554	25 10 59.7	6.348	22	9 57 45.50	2.0944	17 48 42.1	11.477
23	8 11 3.79	2.4483	N.25 4 34.5	6.493	23	9 59 50.96	2.0875	N.17 37 11.3	11.547
	SUNDAY 26.					**TUESDAY 28.**			
0	8 13 30.47	2.4411	N.24 58 0.6	6.636	0	10 1 56.00	2.0806	N.17 25 36.4	11.616
1	8 15 56.72	2.4338	24 51 18.2	6.776	1	10 4 0.63	2.0738	17 13 57.4	11.682
2	8 18 22.53	2.4265	24 44 27.5	6.914	2	10 6 4.86	2.0671	17 2 14.5	11.748
3	8 20 47.90	2.4191	24 37 28.5	7.052	3	10 8 8.68	2.0603	16 50 27.7	11.813
4	8 23 12.82	2.4117	24 30 21.3	7.189	4	10 10 12.10	2.0537	16 38 37.0	11.876
5	8 25 37.30	2.4042	24 23 5.9	7.325	5	10 12 15.13	2.0472	16 26 42.6	11.938
6	8 28 1.33	2.3967	24 15 42.3	7.459	6	10 14 17.77	2.0407	16 14 44.5	11.998
7	8 30 24.91	2.3892	24 8 10.8	7.589	7	10 16 20.02	2.0342	16 2 42.8	12.057
8	8 32 48.03	2.3816	24 0 31.6	7.718	8	10 18 21.88	2.0276	15 50 37.6	12.115
9	8 35 10.70	2.3740	23 52 44.7	7.846	9	10 20 23.36	2.0216	15 38 29.0	12.171
10	8 37 32.91	2.3663	23 44 50.1	7.973	10	10 22 24.47	2.0154	15 26 17.1	12.227
11	8 39 54.66	2.3586	23 36 47.9	8.098	11	10 24 25.21	2.0092	15 14 1.8	12.282
12	8 42 15.94	2.3509	23 28 38.3	8.222	12	10 26 25.57	2.0030	15 1 43.3	12.334
13	8 44 36.76	2.3432	23 20 21.3	8.343	13	10 28 25.57	1.9970	14 49 21.7	12.386
14	8 46 57.12	2.3355	23 11 57.1	8.463	14	10 30 25.21	1.9911	14 36 57.0	12.437
15	8 49 17.02	2.3277	23 3 25.7	8.582	15	10 32 24.50	1.9852	14 24 29.3	12.486
16	8 51 36.45	2.3199	22 54 47.2	8.699	16	10 34 23.44	1.9794	14 11 58.7	12.534
17	8 53 55.41	2.3122	22 46 1.8	8.814	17	10 36 22.03	1.9736	13 59 25.2	12.589
18	8 56 13.91	2.3044	22 37 9.5	8.928	18	10 38 20.27	1.9678	13 46 48.9	12.628
19	8 58 31.94	2.2966	22 28 10.4	9.040	19	10 40 18.17	1.9622	13 34 9.9	12.673
20	9 0 49.50	2.2888	22 19 4.7	9.150	20	10 42 15.74	1.9568	13 21 28.2	12.716
21	9 3 6.60	2.2811	22 9 52.4	9.259	21	10 44 12.99	1.9514	13 8 44.0	12.759
22	9 5 23.23	2.2732	22 0 33.6	9.367	22	10 46 9.91	1.9460	12 55 57.2	12.801
23	9 7 39.39	2.2654	21 51 8.4	9.472	23	10 48 6.51	1.9407	12 43 7.9	12.841
24	9 9 55.08	2.2577	N.21 41 37.0	9.575	24	10 50 2.79	1.9354	N.12 30 16.3	12.880

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	10 50 2.79	1.9354	N.12 30 16.3	12.880
1	10 51 58.76	1.9302	12 17 22.3	12.919
2	10 53 54.42	1.9252	12 4 26.0	12.956
3	10 55 49.78	1.9202	11 51 27.6	12.992
4	10 57 44.84	1.9153	11 38 27.0	13.027
5	10 59 39.61	1.9105	11 25 24.3	13.062
6	11 1 34.10	1.9057	11 12 19.6	13.095
7	11 3 28.30	1.9010	10 59 12.9	13.127
8	11 5 22.22	1.8964	10 46 4.3	13.158
9	11 7 15.87	1.8919	10 32 53.9	13.188
10	11 9 9.25	1.8874	10 19 41.7	13.218
11	11 11 2.36	1.8830	10 6 27.7	13.246
12	11 12 55.21	1.8788	9 53 12.1	13.273
13	11 14 47.81	1.8746	9 39 54.9	13.300
14	11 16 40.16	1.8704	9 26 36.1	13.327
15	11 18 32.26	1.8663	9 13 15.7	13.352
16	11 20 24.12	1.8623	8 59 53.9	13.375
17	11 22 15.74	1.8584	8 46 30.7	13.397
18	11 24 7.13	1.8546	8 33 6.2	13.419
19	11 25 58.30	1.8509	8 19 40.4	13.441
20	11 27 49.24	1.8472	8 6 13.3	13.462
21	11 29 39.96	1.8436	7 52 45.0	13.482
22	11 31 30.47	1.8401	7 39 15.5	13.500
23	11 33 20.78	1.8367	N. 7 25 45.0	13.518

THURSDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	11 35 10.88	1.8333	N. 7 12 13.4	13.535
1	11 37 0.78	1.8301	6 58 40.8	13.551
2	11 38 50.49	1.8270	6 45 7.3	13.566
3	11 40 40.02	1.8239	6 31 32.9	13.581
4	11 42 29.36	1.8208	6 17 57.6	13.595
5	11 44 18.52	1.8178	6 4 21.5	13.607
6	11 46 7.50	1.8150	5 50 44.7	13.619
7	11 47 56.32	1.8123	5 37 7.2	13.631
8	11 49 44.98	1.8096	5 23 29.0	13.642
9	11 51 33.47	1.8069	5 9 50.1	13.652
10	11 53 21.81	1.8044	4 56 10.7	13.661
11	11 55 10.00	1.8020	4 42 30.8	13.669
12	11 56 58.05	1.7997	4 28 50.4	13.677
13	11 58 45.96	1.7973	4 15 9.5	13.684
14	12 0 33.73	1.7951	4 1 28.3	13.690
15	12 2 21.37	1.7929	3 47 46.7	13.696
16	12 4 8.88	1.7908	3 34 4.8	13.701
17	12 5 56.27	1.7889	3 20 22.6	13.705
18	12 7 43.55	1.7870	3 6 40.2	13.709
19	12 9 30.71	1.7852	2 52 57.6	13.712
20	12 11 17.77	1.7834	2 39 14.8	13.713
21	12 13 4.72	1.7817	2 25 32.0	13.714
22	12 14 51.57	1.7802	2 11 49.1	13.715
23	12 16 38.34	1.7787	1 58 6.2	13.715
24	12 18 25.02	1.7772	N. 1 44 23.3	13.715

FRIDAY, JULY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 18 25.02	1.7772	N. 1 44 23.3	13.715

PHASES OF THE MOON.

		d	h	m
☽ First Quarter	. June	1	21	51.1
○ Full Moon	. . . .	10	1	32.3
☾ Last Quarter	. . . .	17	9	0.7
● New Moon	. . . .	24	2	6.6

		d	h
☾ Apogee. . . .	June	5	6.6
☾ Perigee.		21	2.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	79° 40′ 55″	3216	81° 6′ 45″	3231	82° 32′ 18″	3245	83° 57′ 34″	3258
	Venus	W.	39 40 59	3058	41 10 0	3071	42 38 45	3082	44 7 16	3095
	Pollux	W.	39 7 46	2871	40 40 42	2884	42 13 21	2897	43 45 44	2909
	Spica	E.	51 44 40	2884	50 12 1	2899	48 39 41	2912	47 7 38	2927
	Antares	E.	97 34 52	2869	96 1 54	2883	94 29 13	2896	92 56 49	2909
2	Sun	W.	91 0 10	3319	92 24 0	3330	93 47 37	3339	95 11 3	3350
	Venus	W.	51 26 27	3147	52 53 40	3155	54 20 43	3164	55 47 35	3172
	Pollux	W.	51 23 59	2963	52 54 58	2973	54 25 44	2982	55 56 19	2991
	Spica	E.	39 31 33	2989	38 1 7	3001	36 30 56	3014	35 1 0	3025
	Antares	E.	85 18 35	2964	83 47 37	2974	82 16 52	2983	80 46 18	2993
3	Sun	W.	102 5 33	3391	103 28 0	3399	104 50 18	3405	106 12 29	3411
	Pollux	W.	63 26 38	3029	64 56 15	3035	66 25 44	3041	67 55 6	3046
	Venus	W.	62 59 43	3205	64 25 46	3211	65 51 42	3215	67 17 33	3220
	Regulus	W.	27 19 20	3093	28 47 38	3092	30 15 57	3093	31 44 15	3093
	Antares	E.	73 16 8	3031	71 46 34	3037	70 17 7	3043	68 47 48	3048
4	Sun	W.	113 1 55	3433	114 23 34	3436	115 45 10	3438	117 6 43	3441
	Pollux	W.	75 20 31	3065	76 49 23	3069	78 18 11	3071	79 46 56	3073
	Venus	W.	74 25 40	3235	75 51 8	3236	77 16 34	3237	78 41 59	3238
	Regulus	W.	39 5 29	3099	40 33 40	3100	42 1 50	3100	43 30 0	3100
	Antares	E.	61 22 41	3069	59 53 54	3072	58 25 10	3075	56 56 30	3077
5	Pollux	W.	87 10 19	3075	88 38 59	3075	90 7 39	3073	91 36 21	3073
	Venus	W.	85 49 2	3235	87 14 30	3233	88 40 0	3231	90 5 33	3229
	Regulus	W.	50 50 53	3097	52 19 6	3095	53 47 22	3093	55 15 40	3091
	Saturn	W.	25 42 41	3091	27 11 1	3090	28 39 23	3088	30 7 47	3087
	Antares	E.	49 33 35	3081	48 5 2	3081	46 36 29	3080	45 7 55	3079
	α Aquilæ	E.	98 27 2	3923	97 14 6	3917	96 1 3	3912	94 47 55	3906
6	Regulus	W.	62 37 57	3076	64 6 36	3072	65 35 20	3069	67 4 8	3064
	Saturn	W.	37 30 32	3072	38 59 16	3068	40 28 5	3064	41 56 59	3060
	Antares	E.	37 44 43	3070	36 15 57	3069	34 47 9	3065	33 18 17	3063
	α Aquilæ	E.	88 41 7	3890	87 27 37	3888	86 14 5	3887	85 0 32	3887
	Mars	E.	101 33 52	3176	100 7 14	3171	98 40 30	3167	97 13 41	3163
7	Regulus	W.	74 29 38	3038	75 59 4	3032	77 28 37	3026	78 58 17	3020
	Saturn	W.	49 22 53	3034	50 52 23	3029	52 22 0	3023	53 51 44	3017
	Spica	W.	20 37 20	3114	22 5 13	3096	23 33 27	3081	25 2 0	3067
	α Aquilæ	E.	78 52 59	3897	77 39 36	3901	76 26 17	3907	75 13 4	3913
	Mars	E.	89 58 9	3135	88 30 42	3129	87 3 8	3123	85 35 26	3117
8	Saturn	W.	61 22 24	2984	62 52 57	2976	64 23 40	2969	65 54 32	2962
	Spica	W.	32 28 33	3011	33 58 32	3001	35 28 44	2991	36 59 8	2981
	α Aquilæ	E.	69 8 58	3963	67 56 42	3977	66 44 40	3995	65 32 55	4012
	Mars	E.	78 14 52	3080	76 46 18	3072	75 17 34	3065	73 48 41	3056
	Fomalhaut	E.	96 46 10	3148	95 18 58	3139	93 51 36	3132	92 24 5	3124
9	Saturn	W.	73 31 16	2922	75 3 7	2914	76 35 8	2906	78 7 19	2898
	Spica	W.	44 34 10	2934	46 5 46	2924	47 37 34	2915	49 9 34	2905
	α Aquilæ	E.	59 39 14	4136	58 29 47	4169	57 20 52	4205	56 12 31	4247

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	**Sun**	W.	85° 22′ 35″	3271	86° 47′ 20″	3283	88° 11′ 51″	3296	89° 36′ 7″	3307
	Venus	W.	45 35 32	3105	47 3 35	3116	48 31 25	3127	49 59 2	3137
	Pollux	W.	45 17 52	2920	46 49 45	2932	48 21 23	2942	49 52 48	2954
	Spica	E.	45 35 53	2939	44 4 24	2952	42 33 11	2965	41 2 14	2977
	Antares	E.	91 24 41	2920	89 52 48	2932	88 21 10	2943	86 49 46	2954
2	**Sun**	W.	96 34 17	3358	97 57 21	3368	99 20 14	3376	100 42 58	3384
	Venus	W.	57 14 18	3179	58 40 52	3187	60 7 17	3193	61 33 34	3200
	Pollux	W.	57 26 43	3000	58 56 56	3008	60 26 59	3015	61 56 53	3022
	Spica	E.	33 31 18	3036	32 1 50	3048	30 32 37	3060	29 3 38	3072
	Antares	E.	79 15 56	3001	77 45 44	3009	76 15 43	3017	74 45 51	3024
3	**Sun**	W.	107 34 33	3416	108 56 31	3421	110 18 24	3425	111 40 12	3430
	Pollux	W.	69 24 22	3051	70 53 32	3056	72 22 36	3059	73 51 36	3063
	Venus	W.	68 43 18	3224	70 8 59	3227	71 34 36	3230	73 0 10	3233
	Regulus	W.	33 12 33	3095	34 40 49	3096	36 9 4	3097	37 37 17	3098
	Antares	E.	67 18 35	3054	65 49 29	3058	64 20 28	3062	62 51 32	3066
4	**Sun**	W.	118 28 13	3443	119 49 41	3444	121 11 8	3445	122 32 34	3446
	Pollux	W.	81 15 39	3074	82 44 20	3075	84 13 0	3075	85 41 40	3076
	Venus	W.	80 7 23	3238	81 32 47	3238	82 58 11	3237	84 23 36	3236
	Regulus	W.	44 58 10	3100	46 26 20	3100	47 54 30	3099	49 22 41	3098
	Antares	E.	55 27 52	3078	53 59 16	3080	52 30 42	3080	51 2 8	3081
5	Pollux	W.	93 5 4	3071	94 33 49	3069	96 2 37	3066	97 31 28	3064
	Venus	W.	91 31 8	3225	92 56 47	3222	94 22 30	3218	95 48 18	3214
	Regulus	W.	56 44 1	3088	58 12 25	3086	59 40 52	3082	61 9 23	3080
	Saturn	W.	31 36 13	3084	33 4 42	3081	34 33 15	3078	36 1 52	3075
	Antares	E.	43 39 20	3078	42 10 44	3077	40 42 6	3075	39 13 26	3073
	α Aquilæ	E.	93 34 41	3902	92 21 23	3898	91 8 1	3894	89 54 35	3892
6	Regulus	W.	68 33 2	3060	70 2 1	3054	71 31 7	3049	73 0 19	3043
	Saturn	W.	43 25 58	3055	44 55 3	3051	46 24 13	3045	47 53 30	3040
	Antares	E.	31 49 22	3060	30 20 23	3057	28 51 21	3054	27 22 15	3051
	α Aquilæ	E.	83 46 59	3887	82 33 26	3889	81 19 55	3891	80 6 26	3893
	Mars	E.	95 46 47	3158	94 19 47	3153	92 52 41	3147	91 25 28	3142
7	Regulus	W.	80 28 5	3014	81 58 1	3007	83 28 5	3000	84 58 18	2993
	Saturn	W.	55 21 36	3011	56 51 35	3004	58 21 43	2997	59 51 59	2990
	Spica	W.	26 30 50	3055	27 59 55	3043	29 29 14	3032	30 58 47	3022
	α Aquilæ	E.	73 59 57	3920	72 46 58	3928	71 34 7	3939	70 21 27	3950
	Mars	E.	84 7 37	3110	82 39 39	3102	81 11 32	3096	79 43 17	3087
8	**Saturn**	W.	67 25 33	2954	68 56 44	2946	70 28 5	2938	71 59 36	2931
	Spica	W.	38 29 44	2972	40 0 32	2962	41 31 33	2952	43 2 46	2943
	α Aquilæ	E.	64 21 27	4032	63 10 19	4054	61 59 33	4078	60 49 10	4106
	Mars	E.	72 19 38	3048	70 50 25	3039	69 21 1	3031	67 51 27	3023
	Fomalhaut	E.	90 56 24	3116	89 28 34	3108	88 0 34	3101	86 32 26	3093
9	**Saturn**	W.	79 39 41	2889	81 12 14	2881	82 44 57	2872	84 17 52	2864
	Spica	W.	50 41 46	2897	52 14 9	2887	53 46 44	2878	55 19 31	2869
	α Aquilæ	E.	55 4 49	4291	53 57 48	4341	52 51 33	4395	51 46 7	4455

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	Mars	E.	66° 21′ 43″	3014	64° 51′ 48″	3005	63° 21′ 42″	2997	61° 51′ 25″	2988
	Fomalhaut	E.	85 4 8	3086	83 35 41	3079	82 7 6	3073	80 38 23	3065
	α Pegasi	E.	104 47 6	3318	103 23 15	3304	101 59 8	3291	100 34 46	3279
10	Saturn	W.	85 50 57	2855	87 24 13	2846	88 57 41	2838	90 31 20	2829
	Spica	W.	56 52 30	2859	58 25 41	2851	59 59 3	2841	61 32 38	2832
	α Aquilæ	E.	50 41 35	4520	49 38 1	4593	48 35 30	4673	47 34 8	4763
	Mars	E.	54 17 12	2942	52 45 47	2933	51 14 10	2924	49 42 22	2915
	Fomalhaut	E.	73 12 47	3035	71 43 18	3030	70 13 43	3026	68 44 2	3021
	α Pegasi	E.	93 29 31	3225	92 3 51	3214	90 37 59	3206	89 11 57	3197
11	Spica	W.	69 23 28	2786	70 58 14	2778	72 33 11	2768	74 8 21	2760
	Antares	W.	23 30 18	2800	25 4 46	2789	26 39 28	2778	28 14 25	2766
	Mars	E.	42 0 24	2869	40 27 25	2859	38 54 14	2850	37 20 51	2841
	Fomalhaut	E.	61 14 26	3006	59 44 21	3005	58 14 15	3005	56 44 9	3005
	α Pegasi	E.	81 59 26	3163	80 32 33	3158	79 5 33	3153	77 38 27	3149
	Jupiter	E.	107 4 13	2832	105 30 27	2824	103 56 30	2815	102 22 21	2806
12	Spica	W.	82 7 6	2714	83 43 27	2706	85 19 59	2697	86 56 43	2688
	Antares	W.	36 12 42	2715	37 49 2	2706	39 25 34	2696	41 2 19	2687
	Mars	E.	29 31 0	2796	27 56 27	2787	26 21 42	2779	24 46 46	2769
	Fomalhaut	E.	49 14 10	3025	47 44 28	3033	46 14 56	3043	44 45 36	3056
	α Pegasi	E.	70 22 5	3140	68 54 44	3141	67 27 24	3143	66 0 6	3146
	Jupiter	E.	94 28 41	2760	92 53 21	2752	91 17 50	2743	89 42 7	2734
13	Spica	W.	95 3 19	2645	96 41 13	2636	98 19 19	2627	99 57 37	2619
	Antares	W.	49 9 10	2641	50 47 9	2632	52 25 21	2623	54 3 45	2614
	α Pegasi	E.	58 45 0	3180	57 18 27	3192	55 52 8	3205	54 26 5	3221
	Jupiter	E.	81 40 34	2689	80 3 39	2681	78 26 33	2673	76 49 15	2663
	α Arietis	E.	99 15 14	2713	97 38 51	2704	96 2 16	2695	94 25 29	2686
14	Antares	W.	62 18 47	2569	63 58 24	2561	65 38 13	2552	67 18 14	2543
	Jupiter	E.	68 39 45	2618	67 1 15	2610	65 22 33	2601	63 43 39	2592
	α Arietis	E.	86 18 36	2643	84 40 39	2634	83 2 30	2626	81 24 10	2618
	Sun	E.	132 46 58	2898	131 14 36	2887	129 42 1	2878	128 9 14	2869
15	Antares	W.	75 41 25	2499	77 22 40	2490	79 4 7	2482	80 45 46	2472
	Jupiter	E.	55 26 7	2548	53 46 0	2538	52 5 40	2530	50 25 8	2521
	α Arietis	E.	73 9 53	2580	71 30 31	2574	69 51 0	2566	68 11 19	2560
	Sun	E.	120 22 13	2820	118 48 11	2811	117 13 57	2801	115 39 31	2792
16	Antares	W.	89 17 9	2429	91 0 3	2420	92 43 9	2412	94 26 27	2403
	α Aquilæ	W.	49 42 9	4092	50 52 18	4002	52 3 56	3919	53 16 56	3843
	Mars	W.	22 45 6	2502	24 26 17	2491	26 7 43	2481	27 49 23	2471
	Jupiter	E.	41 59 24	2477	40 17 38	2468	38 35 40	2460	36 53 30	2450
	α Arietis	E.	59 50 45	2531	58 10 15	2527	56 29 39	2522	54 48 57	2518
	Sun	E.	107 44 12	2744	106 8 31	2735	104 32 38	2725	102 56 32	2716
17	α Aquilæ	W.	59 39 53	3539	60 59 34	3490	62 20 9	3446	63 41 34	3404
	Mars	W.	36 21 8	2424	38 4 9	2415	39 47 23	2405	41 30 51	2396
	α Arietis	E.	46 24 28	2511	44 43 30	2513	43 2 35	2515	41 21 43	2520
	Sun	E.	94 52 58	2670	93 15 38	2661	91 38 6	2652	90 0 22	2643

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
9	**Mars**	E.	60° 20′ 57″	2979	58° 50′ 18″	2969	57° 19′ 27″	2961	55° 48′ 25″	2952
	Fomalhaut	E.	79 9 31	3059	77 40 31	3053	76 11 24	3047	74 42 9	3041
	α Pegasi	E.	99 10 10	3267	97 45 20	3255	96 20 16	3245	94 55 0	3234
10	**Saturn**	W.	92 5 10	2821	93 39 11	2811	95 13 24	2803	96 47 48	2795
	Spica	W.	63 6 24	2823	64 40 22	2814	66 14 32	2805	67 48 54	2795
	α Aquilæ	E.	46 34 1	4861	45 35 15	4970	44 37 56	5092	43 42 12	5226
	Mars	E.	48 10 22	2905	46 38 10	2897	45 5 47	2887	43 33 11	2878
	Fomalhaut	E.	67 14 15	3018	65 44 24	3014	64 14 28	3011	62 44 29	3008
	α Pegasi	E.	87 45 44	3189	86 19 22	3182	84 52 51	3175	83 26 12	3169
11	Spica	W.	75 43 42	2750	77 19 15	2741	78 55 0	2732	80 30 57	2723
	Antares	W.	29 49 38	2756	31 25 4	2746	33 0 43	2735	34 36 36	2725
	Mars	E.	35 47 16	2831	34 13 29	2823	32 39 31	2814	31 5 21	2805
	Fomalhaut	E.	55 14 3	3006	53 43 58	3009	52 13 57	3013	50 44 0	3018
	α Pegasi	E.	76 11 17	3145	74 44 2	3143	73 16 45	3142	71 49 26	3140
	Jupiter	E.	100 48 1	2797	99 13 29	2788	97 38 45	2779	96 3 49	2769
12	Spica	W.	88 33 39	2679	90 10 47	2671	91 48 6	2662	93 25 37	2654
	Antares	W.	42 39 16	2678	44 16 26	2669	45 53 48	2659	47 31 23	2650
	Mars	E.	23 11 38	2761	21 36 19	2753	20 0 50	2746	18 25 11	2740
	Fomalhaut	E.	43 16 32	3070	41 47 46	3087	40 19 21	3109	38 51 22	3133
	α Pegasi	E.	64 32 52	3150	63 5 43	3155	61 38 40	3162	60 11 45	3170
	Jupiter	E.	88 6 12	2725	86 30 5	2716	84 53 47	2707	83 17 16	2698
13	Spica	W.	101 36 6	2610	103 14 47	2601	104 53 40	2593	106 32 44	2585
	Antares	W.	55 42 21	2605	57 21 9	2596	59 0 10	2588	60 39 22	2578
	α Pegasi	E.	53 0 21	3240	51 34 59	3261	50 10 2	3286	48 45 34	3315
	Jupiter	E.	75 11 45	2654	73 34 3	2645	71 56 9	2636	70 18 3	2627
	α Arietis	E.	92 48 30	2677	91 11 19	2668	89 33 56	2660	87 56 22	2651
14	Antares	W.	68 58 28	2534	70 38 54	2525	72 19 32	2517	74 0 22	2507
	Jupiter	E.	62 4 33	2583	60 25 15	2574	58 45 44	2566	57 6 2	2556
	α Arietis	E.	79 45 40	2610	78 6 59	2602	76 28 7	2595	74 49 5	2588
	Sun	E.	126 36 15	2859	125 3 3	2849	123 29 39	2839	121 56 2	2830
15	Antares	W.	82 27 38	2463	84 9 42	2455	85 51 59	2446	87 34 28	2438
	Jupiter	E.	48 44 24	2512	47 3 28	2503	45 22 19	2494	43 40 58	2485
	α Arietis	E.	66 31 29	2553	64 51 30	2548	63 11 23	2542	61 31 8	2536
	Sun	E.	114 4 52	2782	112 30 1	2772	110 54 57	2763	109 19 41	2753
16	Antares	W.	96 9 58	2394	97 53 41	2386	99 37 36	2377	101 21 44	2368
	α Aquilæ	W.	54 31 14	3772	55 46 45	3707	57 3 25	3647	58 21 9	3591
	Mars	W.	29 31 17	2461	31 13 25	2452	32 55 46	2443	34 38 20	2433
	Jupiter	E.	35 11 7	2442	33 28 32	2433	31 45 45	2425	30 2 46	2416
	α Arietis	E.	53 8 9	2516	51 27 18	2513	49 46 23	2512	48 5 26	2511
	Sun	E.	101 20 14	2707	99 43 44	2698	98 7 1	2689	96 30 6	2679
17	α Aquilæ	W.	65 3 46	3365	66 26 42	3329	67 50 20	3296	69 14 36	3265
	Mars	W.	43 14 31	2387	44 58 24	2378	46 42 30	2369	48 26 49	2361
	α Arietis	E.	39 40 57	2525	38 0 19	2535	36 19 54	2546	34 39 45	2561
	Sun	E.	88 22 26	2635	86 44 18	2626	85 5 59	2618	83 27 28	2609

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
18	α Aquilæ	W.	70° 39′ 29″	3236	72° 4′ 55″	3209	73° 30′ 53″	3185	74° 57′ 20″	3162
	Mars	W.	50 11 20	2352	51 56 4	2344	53 40 59	2336	55 26 6	2328
	Fomalhaut	W.	37 5 22	2788	38 40 5	2743	40 15 48	2703	41 52 24	2667
	Sun	E.	81 48 45	2601	80 9 51	2593	78 30 46	2585	76 51 30	2577
19	α Aquilæ	W.	82 15 41	3076	83 44 20	3065	85 13 13	3053	86 42 20	3045
	Mars	W.	64 14 33	2290	66 0 47	2284	67 47 10	2277	69 33 43	2270
	Fomalhaut	W.	50 6 10	2530	51 46 41	2510	53 27 40	2492	55 9 5	2474
	Sun	E.	68 32 35	2541	66 52 19	2535	65 11 54	2529	63 31 21	2523
20	α Aquilæ	W.	94 9 55	3026	95 39 36	3026	97 9 16	3030	98 38 52	3035
	Mars	W.	78 28 41	2243	80 16 4	2239	82 3 33	2235	83 51 9	2231
	Fomalhaut	W.	63 41 43	2407	65 25 8	2396	67 8 48	2387	68 52 41	2379
	α Pegasi	W.	46 24 7	2957	47 55 14	2910	49 27 20	2868	51 0 20	2831
	Sun	E.	55 6 44	2499	53 25 30	2495	51 44 10	2492	50 2 46	2490
21	Mars	W.	92 50 17	2218	94 38 17	2217	96 26 19	2216	98 14 22	2216
	Fomalhaut	W.	77 34 37	2352	79 19 21	2348	81 4 10	2346	82 49 2	2345
	α Pegasi	W.	58 56 1	2693	60 32 50	2673	62 10 6	2656	63 47 45	2641
	Jupiter	W.	28 20 33	2217	30 8 35	2215	31 56 40	2214	33 44 46	2214
	Sun	E.	41 35 7	2485	39 53 32	2486	38 11 59	2487	36 30 28	2489
22	Fomalhaut	W.	91 33 26	2350	93 18 12	2355	95 2 52	2359	96 47 25	2364
	α Pegasi	W.	72 0 14	2593	73 39 18	2588	75 18 29	2585	76 57 45	2583
	Jupiter	W.	42 45 4	2221	44 33 0	2224	46 20 52	2227	48 8 39	2231
	Sun	E.	28 4 4	2515	26 23 12	2524	24 42 32	2535	23 2 8	2548
25	Sun	W.	12 45 0	2862	14 18 7	2847	15 51 34	2837	17 25 14	2832
	Regulus	E.	42 11 33	2410	40 28 12	2425	38 45 13	2442	37 2 38	2459
	Saturn	E.	67 44 54	2396	66 1 14	2410	64 17 54	2424	62 34 53	2438
	Spica	E.	96 12 5	2389	94 28 15	2403	92 44 44	2417	91 1 33	2430
26	Sun	W.	25 13 22	2862	26 46 30	2873	28 19 24	2885	29 52 2	2898
	Saturn	E.	54 5 2	2513	52 24 7	2529	50 43 34	2545	49 3 23	2561
	Spica	E.	82 30 42	2504	80 49 35	2520	79 8 50	2536	77 28 27	2551
27	Sun	W.	37 30 46	2971	39 1 35	2987	40 32 4	3003	42 2 13	3018
	Saturn	E.	40 47 58	2641	39 9 59	2657	37 32 22	2674	35 55 7	2690
	Spica	E.	69 11 56	2631	67 33 43	2647	65 55 52	2663	64 18 23	2679
28	Sun	W.	49 28 8	3097	50 56 21	3113	52 24 15	3129	53 51 50	3143
	Spica	E.	56 16 18	2759	54 40 56	2775	53 5 55	2790	51 31 14	2805
	Antares	E.	102 7 46	2747	100 32 9	2762	98 56 51	2777	97 21 53	2792
29	Sun	W.	61 5 17	3216	62 31 7	3230	63 56 41	3243	65 21 59	3257
	Spica	E.	43 42 42	2880	42 9 57	2894	40 37 30	2908	39 5 21	2923
	Antares	E.	89 31 40	2860	87 58 30	2873	86 25 37	2886	84 53 0	2898
30	Sun	W.	72 24 45	3317	73 48 37	3327	75 12 17	3338	76 35 45	3348
	Regulus	W.	23 23 30	3033	24 53 2	3034	26 22 33	3036	27 52 1	3039
	Spica	E.	31 29 4	2992	29 58 41	3006	28 28 36	3020	26 58 48	3034
	Antares	E.	77 13 42	2954	75 42 32	2965	74 11 35	2974	72 40 50	2984

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
18	α Aquilæ	W.	76° 24′ 15″	3142	77° 51′ 34″	3123	79° 19′ 16″	3105	80° 47′ 19″	3090
	Mars	W.	57 11 25	2330	58 56 55	2319	60 42 37	2304	62 28 30	2298
	Fomalhaut	W.	43 29 48	2635	45 7 56	2604	46 46 45	2578	48 26 10	2553
	Sun	E.	75 12 3	2569	73 32 26	2562	71 52 39	2555	70 12 42	2548
19	α Aquilæ	W.	88 11 37	3038	89 41 3	3032	91 10 36	3028	92 40 14	3026
	Mars	W.	71 20 26	2265	73 7 17	2259	74 54 17	2253	76 41 25	2248
	Fomalhaut	W.	56 50 55	2458	58 33 8	2443	60 15 41	2430	61 58 33	2417
	Sun	E.	61 50 40	2517	60 9 51	2512	58 28 55	2508	56 47 53	2503
20	α Aquilæ	W.	100 8 21	3042	101 37 42	3051	103 6 52	3061	104 35 49	3075
	Mars	W.	85 38 50	2228	87 26 36	2225	89 14 26	2223	91 2 20	2220
	Fomalhaut	W.	70 36 46	2372	72 21 1	2365	74 5 26	2360	75 49 58	2355
	α Pegasi	W.	52 34 8	2797	54 8 40	2766	55 43 53	2739	57 19 41	2715
	Sun	E.	48 21 19	2488	46 39 49	2486	44 58 16	2485	43 16 42	2485
21	Mars	W.	100 2 25	2216	101 50 28	2216	103 38 31	2218	105 26 32	2220
	Fomalhaut	W.	84 33 56	2345	86 18 50	2345	88 3 44	2346	89 48 36	2348
	α Pegasi	W.	65 25 44	2628	67 4 1	2617	68 42 33	2607	70 21 18	2599
	Jupiter	W.	35 32 52	2214	37 20 58	2216	39 9 2	2217	40 57 4	2218
	Sun	E.	34 49 0	2492	33 7 36	2497	31 26 18	2502	29 45 7	2507
22	Fomalhaut	W.	98 31 51	2371	100 16 8	2378	102 0 14	2386	103 44 9	2394
	α Pegasi	W.	78 37 3	2583	80 16 22	2583	81 55 40	2585	83 34 56	2589
	Jupiter	W.	49 56 20	2236	51 43 55	2241	53 31 22	2245	55 18 42	2251
	Sun	E.	21 22 2	2565	19 42 19	2584	18 3 2	2607	16 24 17	2635
25	Sun	W.	18 59 0	2832	20 32 46	2836	22 6 27	2842	23 40 0	2851
	Regulus	E.	35 20 27	2477	33 38 41	2495	31 57 21	2515	30 16 28	2535
	Saturn	E.	60 52 13	2453	59 9 53	2468	57 27 55	2483	55 46 18	2498
	Spica	E.	89 18 41	2445	87 36 10	2460	85 54 0	2474	84 12 10	2489
26	Sun	W.	31 24 23	2912	32 56 27	2927	34 28 12	2942	35 59 38	2956
	Saturn	E.	47 23 34	2577	45 44 7	2593	44 5 2	2609	42 26 19	2625
	Spica	E.	75 48 25	2567	74 8 45	2583	72 29 27	2599	70 50 31	2615
27	Sun	W.	43 32 3	3034	45 1 33	3050	46 30 44	3065	47 59 36	3082
	Saturn	E.	34 18 14	2707	32 41 43	2723	31 5 34	2739	29 29 46	2755
	Spica	E.	62 41 15	2695	61 4 29	2711	59 28 4	2728	57 52 1	2743
28	Sun	W.	55 19 7	3158	56 46 6	3173	58 12 47	3188	59 39 11	3203
	Spica	E.	49 56 52	2820	48 22 50	2835	46 49 8	2850	45 15 45	2866
	Antares	E.	95 47 14	2805	94 12 53	2820	92 38 51	2834	91 5 7	2847
29	Sun	W.	66 47 1	3270	68 11 48	3282	69 36 21	3294	71 0 40	3306
	Spica	E.	37 33 31	2936	36 1 58	2950	34 30 43	2964	32 59 45	2977
	Antares	E.	83 20 39	2910	81 48 33	2922	80 16 42	2933	78 45 5	2944
30	Sun	W.	77 59 1	3357	79 22 7	3366	80 45 2	3375	82 7 47	3383
	Regulus	W.	29 21 26	3043	30 50 46	3046	32 20 2	3050	33 49 13	3054
	Spica	E.	25 29 18	3050	24 0 7	3066	22 31 16	3084	21 2 47	3104
	Antares	E.	71 10 17	2993	69 39 55	3001	68 9 43	3009	66 39 41	3017

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Frid.	1	6 43 41.94	10.334	N.23 4 29.4	−10.78	15 46.12	68.75	3 41.34	0.477
Sat.	2	6 47 49.80	10.322	22 59 58.3	11.79	15 46.12	68.72	3 52.61	0.465
SUN.	3	6 51 57.35	10.308	22 55 3.2	12.79	15 46.13	68.68	4 3.58	0.451
Mon.	4	6 56 4.58	10.294	22 49 44.1	−13.78	15 46.14	68.64	4 14.22	0.437
Tues.	5	7 0 11.46	10.279	22 44 1.3	14.77	15 46.16	68.59	4 24.51	0.422
Wed.	6	7 4 17.98	10.263	22 37 54.8	15.75	15 46.18	68.54	4 34.44	0.406
Thur.	7	7 8 24.11	10.247	22 31 24.8	−16.73	15 46.20	68.49	4 43.99	0.390
Frid.	8	7 12 29.85	10.230	22 24 31.5	17.70	15 46.22	68.43	4 53.15	0.373
Sat.	9	7 16 35.18	10.213	22 17 15.1	18.66	15 46.25	68.37	5 1.90	0.356
SUN.	10	7 20 40.08	10.195	22 9 35.6	−19.61	15 46.28	68.31	5 10.23	0.338
Mon.	11	7 24 44.55	10.177	22 1 33.2	20.56	15 46.32	68.25	5 18.12	0.320
Tues.	12	7 28 48.57	10.158	21 53 8.2	21.50	15 46.36	68.19	5 25.56	0.301
Wed.	13	7 32 52.14	10.139	21 44 20.8	−22.43	15 46.40	68.12	5 32.55	0.262
Thur.	14	7 36 55.24	10.119	21 35 11.1	23.35	15 46.44	68.05	5 39.07	0.262
Frid.	15	7 40 57.86	10.099	21 25 39.3	24.27	15 46.49	67.98	5 45.11	0.242
Sat.	16	7 44 59.99	10.079	21 15 45.7	−25.18	15 46.54	67.91	5 50.66	0.222
SUN.	17	7 49 1.62	10.058	21 5 30.4	26.08	15 46.60	67 83	5 55.72	0.201
Mon.	18	7 53 2.73	10.035	20 54 53.6	26.97	15 46.66	67.76	6 0.27	0.179
Tues.	19	7 57 3.32	10.013	20 43 55.5	−27.85	15 46.73	67.68	6 4.28	0.157
Wed.	20	8 1 3.37	9.990	20 32 36.4	28.72	15 46.80	67.60	6 7.76	0.134
Thur.	21	8 5 2.87	9.967	20 20 56.6	29.58	15 46.88	67.52	6 10.70	0.111
Frid.	22	8 9 1.81	9.944	20 8 56.2	−30.43	15 46.96	67.44	6 13.08	0.088
Sat.	23	8 13 0.19	9.920	19 56 35.6	31.27	15 47.05	67.35	6 14.90	0.064
SUN.	24	8 16 57.98	9.896	19 43 54.9	32.10	15 47.15	67.27	6 16.13	0.040
Mon.	25	8 20 55.18	9.871	19 30 54.5	−32.92	15 47.25	67.18	6 16.77	0.015
Tues.	26	8 24 51.79	9.846	19 17 34.7	33.72	15 47.35	67.10	6 16.82	0.010
Wed.	27	8 28 47.79	9.821	19 3 55.7	34.50	15 47.46	67.01	6 16.26	0.035
Thur.	28	8 32 43.17	9.795	18 49 57.8	−35.29	15 47.58	66.93	6 15.09	0.061
Frid.	29	8 36 37.93	9.769	18 35 41.3	36.06	15 47.70	66.84	6 13.31	0.087
Sat.	30	8 40 32.07	9.743	18 21 6.5	36.82	15 47.82	66.76	6 10.90	0.113
SUN.	31	8 44 25.58	9.717	18 6 13.8	37.56	15 47.95	66.67	6 7.86	0.139
Mon.	32	8 48 18.47	9.691	N.17 51 3.5	−38.29	15 48.08	66.59	6 4 19	0.165

Note.—The mean time of semidiameter passing may be found by subtracting 0s.19 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Frid.	1	6 43 41.30	10.333	N. 23 4 30.1	−10.78	3 41.31	0.477	6 39 59.99
Sat.	2	6 47 49.13	10.321	22 59 59.1	11.79	3 52.58	0.465	6 43 56.55
SUN.	3	6 51 56.65	10.307	22 55 4.1	12.79	4 3.55	0.451	6 47 53.10
Mon.	4	6 56 3.85	10.293	22 49 45.1	−13.78	4 14.19	0.437	6 51 49.66
Tues.	5	7 0 10.70	10.278	22 44 2.4	14.77	4 24.48	0.422	6 55 46.22
Wed.	6	7 4 17.19	10.262	22 37 56.0	15.75	4 34.41	0.406	6 59 42.78
Thur.	7	7 8 23.30	10.246	22 31 26.1	−16.73	4 43.96	0.390	7 3 39.34
Frid.	8	7 12 29.02	10.229	22 24 32.9	17.70	4 53.12	0.373	7 7 35.90
Sat.	9	7 16 34.32	10.212	22 17 16.5	18.66	5 1.87	0.356	7 11 32.45
SUN.	10	7 20 39.20	10.194	22 9 37.2	−19.61	5 10.20	0.338	7 15 29.01
Mon.	11	7 24 43.65	10.176	22 1 35.0	20.56	5 18.09	0.320	7 19 25.56
Tues.	12	7 28 47.65	10.157	21 53 10.1	21.50	5 25.53	0.301	7 23 22.12
Wed.	13	7 32 51.20	10.138	21 44 22.8	−22.43	5 32.52	0.282	7 27 18.68
Thur.	14	7 36 54.28	10.118	21 35 13.3	23.35	5 39.04	0.262	7 31 15.24
Frid.	15	7 40 56.88	10.098	21 25 41.6	24.27	5 45.08	0.242	7 35 11.80
Sat.	16	7 44 59.00	10.078	21 15 48.1	−25.18	5 50.64	0.222	7 39 8.36
SUN.	17	7 49 0.62	10.057	21 5 32.9	26.08	5 55.70	0.201	7 43 4.92
Mon.	18	7 53 1.72	10.035	20 54 56.2	26.97	6 0.25	0.179	7 47 1.48
Tues.	19	7 57 2.30	10.013	20 43 58.2	−27.85	6 4.27	0.157	7 50 58.03
Wed.	20	8 1 2.34	9.990	20 32 39.3	28.72	6 7.75	0.134	7 54 54.59
Thur.	21	8 5 1.84	9.967	20 20 59.6	29.58	6 10.69	0.111	7 58 51.15
Frid.	22	8 9 0.78	9.944	20 8 59.3	−30.43	6 13.07	0.088	8 2 47.71
Sat.	23	8 12 59.15	9.920	19 56 38.8	31.27	6 14.89	0.064	8 6 44.26
SUN.	24	8 16 56.94	9.896	19 43 58.2	32.10	6 16.12	0.040	8 10 40.82
Mon.	25	8 20 54.14	9.871	19 30 57.9	−32.92	6 16.76	0.015	8 14 37.38
Tues.	26	8 24 50.75	9.846	19 17 38.2	33.72	6 16.81	0.010	8 18 33.94
Wed.	27	8 28 46.75	9.821	19 3 59.3	34.50	6 16.26	0.035	8 22 30.49
Thur.	28	8 32 42.14	9.795	18 50 1.5	−35.29	6 15.09	0.061	8 26 27.05
Frid.	29	8 36 36.91	9.769	18 35 45.1	36.06	6 13.31	0.087	8 30 23.60
Sat.	30	8 40 31.06	9.743	18 21 10.4	36.82	6 10.90	0.113	8 34 20.16
SUN.	31	8 44 24.58	9.717	18 6 17.7	37.56	6 7.86	0.139	8 38 16.72
Mon.	32	8 48 17.48	9.691	N. 17 51 7.3	−38.29	6 4.20	0.165	8 42 13.28

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 Hour, $+9^{s}.8565$. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	Diff. for 1 Hour.	LATITUDE	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	183	100 2 39.6	2 26.0	143.00	+ 0.58	0.0072298	- 0.1	17 17 9.64
2	184	100 59 51.3	59 37.6	142.99	0.47	0.0072284	1.0	17 13 13.72
3	185	101 57 2.8	56 48.9	142.98	0.35	0.0072250	1.8	17 9 17.81
4	186	102 54 14.1	54 0.0	142.97	+ 0.22	0.0072196	- 2.6	17 5 21.90
5	187	103 51 25.2	51 10.9	142.96	+ 0.09	0.0072124	3.3	17 1 25.99
6	188	104 48 36.1	48 21.6	142.96	− 0.04	0.0072035	4.0	16 57 30.08
7	189	105 45 46.9	45 32.2	142.96	− 0.16	0.0071931	- 4.6	16 53 34.17
8	190	106 42 57.8	42 42.9	142.96	0.26	0.0071812	5.3	16 49 38.26
9	191	107 40 8.9	39 53.8	142.97	0.34	0.0071678	5.9	16 45 42.34
10	192	108 37 20.2	37 4.9	142.98	− 0.39	0.0071530	- 6.5	16 41 46.43
11	193	109 34 31.7	34 16.2	142.99	0.40	0.0071368	7.1	16 37 50.52
12	194	110 31 43.6	31 27.9	143.00	0.38	0.0071191	7.7	16 33 54.61
13	195	111 28 56.0	28 40.1	143.02	− 0.34	0.0070998	- 8.3	16 29 58.70
14	196	112 26 8.9	25 52.9	143.05	0.27	0.0070790	9.0	16 26 2.78
15	197	113 23 22.5	23 6.3	143.08	0.18	0.0070565	9.7	16 22 6.87
16	198	114 20 36.8	20 20.4	143.11	− 0.07	0.0070322	-10.5	16 18 10.96
17	199	115 17 51.8	17 35.2	143.15	+ 0.06	0.0070059	11.4	16 14 15.05
18	200	116 15 7.5	14 50.7	143.18	0.19	0.0069775	12.3	16 10 19.13
19	201	117 12 24.0	12 7.1	143.21	+ 0.32	0.0069469	-13.2	16 6 23.22
20	202	118 9 41.3	9 24.2	143.24	0.45	0.0069140	14.2	16 2 27.31
21	203	119 6 59.4	6 42.1	143.27	0.56	0.0068788	15.2	15 58 31.40
22	204	120 4 18.2	4 0.8	143.30	+ 0.65	0.0068412	-16.2	15 54 35.48
23	205	121 1 37.8	1 20.2	143.33	0.71	0.0068010	17.3	15 50 39.57
24	206	121 58 58.1	58 40.4	143.36	0.74	0.0067582	18.3	15 46 43.66
25	207	122 56 19.2	56 1.3	143.39	+ 0.74	0.0067128	-19.4	15 42 47.75
26	208	123 53 40.9	53 22.8	143.42	0.71	0 0066650	20.4	15 38 51.83
27	209	124 51 3.2	50 44.9	143.44	0.66	0.0066147	21.5	15 34 55.92
28	210	125 48 26.1	48 7.7	143.47	+ 0.58	0.0065620	-22.4	15 31 0.01
29	211	126 45 49.6	45 31.1	143.50	0.47	0.0065071	23.3	15 27 4.10
30	212	127 43 13.8	42 55.1	143.53	0.35	0.0064500	24.2	15 23 8.19
31	213	128 40 38.6	40 19.6	143.55	0.22	0.0063908	25.0	15 19 12.28
32	214	129 38 3.9	37 44.8	143.58	+ 0.09	0.0063297	-25.8	15 15 16.37

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $1^d.0$.

Diff. for 1 Hour,
— $9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 54.1	14 51.7	54 34.6	−0.85	54 25.7	−0.64	5 47.7	1.66	6.9
2	14 49.9	14 48.9	54 19.3	0.43	54 15.5	−0.22	6 27.3	1.65	7.9
3	14 48.5	14 48.9	54 14.2	−0.01	54 15.4	+0.21	7 7.4	1.69	8.9
4	14 49.8	14 51.5	54 19.1	+0.41	54 25.1	+0.59	7 49.2	1.80	9.9
5	14 53.7	14 56.4	54 33.1	0.76	54 43.1	0.91	8 33.6	1.93	10.9
6	14 59.6	15 3.3	54 55.0	1.06	55 8.4	1.17	9 21.5	2.07	11.9
7	15 7.3	15 11.5	55 23.0	+1.27	55 38.7	+1.35	10 13.1	2.21	12.9
8	15 16.0	15 20.6	55 55.2	1.40	56 12.1	1.43	11 7.7	2.32	13.9
9	15 25.3	15 30.0	56 29.3	1.43	56 46.4	1.42	12 4.1	2.36	14.9
10	15 34.6	15 39.0	57 3.3	+1.39	57 19.7	+1.34	13 0.4	2.33	15.9
11	15 43.3	15 47.3	57 35.3	1.27	57 50.1	1.20	13 55.1	2.23	16.9
12	15 51.1	15 54.5	58 3.9	1.11	58 16.6	1.01	14 47.3	2.13	17.9
13	15 57.7	16 0.6	58 28.2	+0.92	58 38.7	+0.82	15 37.2	2.04	18.9
14	16 3.1	16 5.2	58 47.9	0.72	58 55.9	0.63	16 25.4	1.99	19.9
15	16 7.1	16 8.7	59 2.9	0.53	59 8.6	0.44	17 13.1	1.99	20.9
16	16 9.9	16 10.9	59 13.2	+0.34	59 16.6	+0.24	18 1.7	2.05	21.9
17	16 11.5	16 11.7	59 18.8	+0.14	59 19.8	+0.03	18 52.4	2.17	22.9
18	16 11.6	16 11.1	59 19.4	−0.10	59 17.5	−0.22	19 46.2	2.31	23.9
19	16 10.2	16 8.9	59 14.2	−0.35	59 9.3	−0.49	20 43.6	2.46	24.9
20	16 7.1	16 4.8	59 2.7	0.62	58 54.4	0.77	21 43.7	2.53	25.9
21	16 2.1	15 58.9	58 44.3	0.91	58 32.5	1.06	22 44.7	2.52	26.9
22	15 55.2	15 51.2	58 19.1	−1.18	58 4.2	−1.30	23 44.1	2.41	27.9
23	15 46.7	15 42.0	57 47.9	1.41	57 30.5	1.49	6		28.9
24	15 37.0	15 31.9	57 12.2	1.55	56 53.4	1.59	0 40.0	2.23	0.5
25	15 26.7	15 21.5	56 34.3	−1.59	56 15.3	−1.57	1 31.3	2.05	1.5
26	15 16.4	15 11.6	55 56.7	1.52	55 38.9	1.45	2 18.3	1.88	2.5
27	15 7.0	15 2.8	55 22.1	1.35	55 6.7	1.21	3 1.8	1.75	3.5
28	14 59.1	14 55.9	54 53.0	−1.07	54 41.1	−0.91	3 43.0	1.68	4.5
29	14 53.2	14 51.1	54 31.2	0.74	54 23.6	0.54	4 22.9	1.65	5.5
30	14 49.7	14 48.9	54 18.4	−0.34	54 15.7	−0.12	5 2.8	1.67	6.5
31	14 48.9	14 49.6	54 15.6	+0.10	54 18.0	+0.31	5 43.8	1.75	7.5
32	14 50.9	14 53.0	54 23.0	+0.52	54 30.5	+0.73	6 26.9	1.86	8.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 1.					**SUNDAY 3.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 18 25.02	1.7772	N. 1 44 23.3	13.715	0	13 43 32.80	1.7989	S. 9 0 43.2	12.917
1	12 20 11.61	1.7759	1 30 40.4	13.713	1	13 45 20.80	1.8011	9 13 37.3	12.885
2	12 21 58.13	1.7746	1 16 57.7	13.711	2	13 47 8.93	1.8033	9 26 29.4	12.851
3	12 23 44.57	1.7734	1 3 15.1	13.708	3	13 48 57.20	1.8057	9 39 19.4	12.817
4	12 25 30.94	1.7723	0 49 32.7	13.705	4	13 50 45.62	1.8082	9 52 7.4	12.782
5	12 27 17.25	1.7712	0 35 50.5	13.701	5	13 52 34.19	1.8107	10 4 53.3	12.747
6	12 29 3.49	1.7702	0 22 8.6	13.696	6	13 54 22.91	1.8133	10 17 37.0	12.710
7	12 30 49.68	1.7694	N. 0 8 27.0	13.691	7	13 56 11.79	1.8161	10 30 18.5	12.673
8	12 32 35.82	1.7687	S. 0 5 14.3	13.685	8	13 58 0.84	1.8188	10 42 57.8	12.636
9	12 34 21.92	1.7680	0 18 55.2	13.678	9	13 59 50.05	1.8216	10 55 34.9	12.598
10	12 36 7.98	1.7673	0 32 35.7	13.671	10	14 1 39.43	1.8245	11 8 9.6	12.559
11	12 37 54.00	1.7667	0 46 15.7	13.663	11	14 3 28.99	1.8274	11 20 41.9	12.519
12	12 39 39.98	1.7662	0 59 55.2	13.654	12	14 5 18.72	1.8304	11 33 11.9	12.479
13	12 41 25.94	1.7658	1 13 34.2	13.645	13	14 7 8.64	1.8336	11 45 39.4	12.438
14	12 43 11.88	1.7655	1 27 12.6	13.635	14	14 8 58.75	1.8367	11 58 4.4	12.396
15	12 44 57.80	1.7652	1 40 50.4	13.625	15	14 10 49.05	1.8399	12 10 26.9	12.353
16	12 46 43.70	1.7650	1 54 27.6	13.614	16	14 12 39.54	1.8432	12 22 46.8	12.309
17	12 48 29.60	1.7649	2 8 4.1	13.602	17	14 14 30.23	1.8466	12 35 4.0	12.264
18	12 50 15.49	1.7648	2 21 39.8	13.589	18	14 16 21.13	1.8500	12 47 18.5	12.219
19	12 52 1.38	1.7649	2 35 14.8	13.576	19	14 18 12.23	1.8535	12 59 30.3	12.174
20	12 53 47.28	1.7651	2 48 49.0	13.562	20	14 20 3.55	1.8571	13 11 39.4	12.127
21	12 55 33.19	1.7653	3 2 22.3	13.547	21	14 21 55.08	1.8607	13 23 45.6	12.079
22	12 57 19.12	1.7656	3 15 54.7	13.532	22	14 23 46.83	1.8643	13 35 48.9	12.031
23	12 59 5.06	1.7659	S. 3 29 26.2	13.517	23	14 25 38.80	1.8680	S. 13 47 49.3	11.982
	SATURDAY 2.					**MONDAY 4.**			
0	13 0 51.02	1.7663	S. 3 42 56.8	13.501	0	14 27 30.99	1.8718	S. 13 59 46.8	11.933
1	13 2 37.01	1.7668	3 56 26.4	13.484	1	14 29 23.41	1.8757	14 11 41.3	11.882
2	13 4 23.04	1.7674	4 9 54.9	13.467	2	14 31 16.07	1.8797	14 23 32.7	11.830
3	13 6 9.10	1.7680	4 23 22.4	13.449	3	14 33 8.97	1.8837	14 35 20.9	11.777
4	13 7 55.20	1.7688	4 36 48.8	13.430	4	14 35 2.11	1.8877	14 47 6.0	11.725
5	13 9 41.35	1.7696	4 50 14.0	13.410	5	14 36 55.49	1.8918	14 58 47.9	11.672
6	13 11 27.55	1.7704	5 3 38.0	13.390	6	14 38 49.12	1.8959	15 10 26.6	11.617
7	13 13 13.80	1.7714	5 17 0.8	13.369	7	14 40 43.00	1.9002	15 22 2.0	11.562
8	13 15 0.12	1.7725	5 30 22.3	13.348	8	14 42 37.14	1.9044	15 33 34.0	11.505
9	13 16 46.50	1.7736	5 43 42.5	13.326	9	14 44 31.53	1.9087	15 45 2.6	11.447
10	13 18 32.95	1.7747	5 57 1.4	13.303	10	14 46 26.18	1.9131	15 56 27.7	11.388
11	13 20 19.47	1.7759	6 10 18.9	13.280	11	14 48 21.10	1.9176	16 7 49.2	11.328
12	13 22 6.06	1.7772	6 23 35.0	13.257	12	14 50 16.29	1.9221	16 19 7.1	11.268
13	13 23 52.74	1.7787	6 36 49.7	13.232	13	14 52 11.75	1.9267	16 30 21.4	11.208
14	13 25 39.50	1.7801	6 50 2.8	13.206	14	14 54 7.49	1.9312	16 41 32.1	11.146
15	13 27 26.35	1.7816	7 3 14.4	13.180	15	14 56 3.50	1.9358	16 52 39.0	11.083
16	13 29 13.29	1.7832	7 16 24.4	13.154	16	14 57 59.79	1.9406	17 3 42.1	11.020
17	13 31 0.34	1.7850	7 29 32.8	13.127	17	14 59 56.37	1.9454	17 14 41.4	10.956
18	13 32 47.49	1.7868	7 42 39.6	13.099	18	15 1 53.24	1.9502	17 25 36.8	10.890
19	13 34 34.75	1.7886	7 55 44.7	13.070	19	15 3 50.40	1.9551	17 36 28.2	10.823
20	13 36 22.12	1.7904	8 8 48.0	13.041	20	15 5 47.85	1.9599	17 47 15.6	10.756
21	13 38 9.60	1.7923	8 21 49.6	13.011	21	15 7 45.59	1.9649	17 57 58.9	10.687
22	13 39 57.20	1.7944	8 34 49.3	12.980	22	15 9 43.64	1.9700	18 8 38.1	10.618
23	13 41 44.93	1.7966	8 47 47.2	12.949	23	15 11 41.99	1.9750	18 19 13.1	10.548
24	13 43 32.80	1.7989	S. 9 0 43.2	12.917	24	15 13 40.64	1.9801	S. 18 29 43.9	10.477

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 5.					**THURSDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	15 13 40.64	1.9801	S. 18 29 43.9	10.477	0	16 55 7.52	2.2500	S. 25 10 51.8	5.822
1	15 15 39.60	1.9852	18 40 10.4	10.405	1	16 57 22.68	2.2554	25 16 37.4	5.698
2	15 17 38.87	1.9904	18 50 32.5	10.332	2	16 59 38.17	2.2609	25 22 15.6	5.574
3	15 19 38.45	1.9957	19 0 50.2	10.257	3	17 1 53.99	2.2663	25 27 46.3	5.448
4	15 21 38.35	2.0009	19 11 3.4	10.182	4	17 4 10.13	2.2716	25 33 9.4	5.322
5	15 23 38.56	2.0062	19 21 12.1	10.106	5	17 6 26.58	2.2768	25 38 24.9	5.193
6	15 25 39.09	2.0115	19 31 16.1	10.028	6	17 8 43.35	2.2821	25 43 32.6	5.064
7	15 27 39.94	2.0169	19 41 15.4	9.949	7	17 11 0.43	2.2872	25 48 32.6	4.935
8	15 29 41.12	2.0223	19 51 10.0	9.871	8	17 13 17.82	2.2923	25 53 24.8	4.804
9	15 31 42.62	2.0277	20 0 59.9	9.792	9	17 15 35.51	2.2973	25 58 9.1	4.672
10	15 33 44.45	2.0332	20 10 45.0	9.711	10	17 17 53.50	2.3023	26 2 45.4	4.539
11	15 35 46.61	2.0387	20 20 25.2	9.628	11	17 20 11.79	2.3073	26 7 13.8	4.406
12	15 37 49.10	2.0442	20 30 0.4	9.544	12	17 22 30.38	2.3122	26 11 34.1	4.271
13	15 39 51.92	2.0498	20 39 30.5	9.460	13	17 24 49.26	2.3170	26 15 46.3	4.135
14	15 41 55.08	2.0555	20 48 55.6	9.375	14	17 27 8.42	2.3217	26 19 50.3	3.998
15	15 43 58.58	2.0612	20 58 15.5	9.288	15	17 29 27.86	2.3263	26 23 46.1	3.861
16	15 46 2.42	2.0668	21 7 30.1	9.200	16	17 31 47.58	2.3309	26 27 33.6	3.722
17	15 48 6.59	2.0724	21 16 39.5	9.112	17	17 34 7.57	2.3354	26 31 12.7	3.583
18	15 50 11.10	2.0781	21 25 43.5	9.022	18	17 36 27.83	2.3399	26 34 43.5	3.443
19	15 52 15.96	2.0838	21 34 42.1	8.931	19	17 38 48.36	2.3442	26 38 5.9	3.302
20	15 54 21.16	2.0896	21 43 35.2	8.839	20	17 41 9.14	2.3484	26 41 19.7	3.159
21	15 56 26.71	2.0953	21 52 22.8	8.747	21	17 43 30.17	2.3526	26 44 25.0	3.016
22	15 58 32.60	2.1011	22 1 4.8	8.653	22	17 45 51.45	2.3567	26 47 21.7	2.872
23	16 0 38.84	2.1068	S. 22 9 41.1	8.558	23	17 48 12.98	2.3608	S. 26 50 9.7	2.728
	WEDNESDAY 6.					**FRIDAY 8.**			
0	16 2 45.42	2.1126	S. 22 18 11.7	8.462	0	17 50 34.75	2.3647	S. 26 52 49.1	2.583
1	16 4 52.35	2.1184	22 26 36.5	8.364	1	17 52 56.75	2.3686	26 55 19.7	2.437
2	16 6 59.63	2.1242	22 34 55.4	8.265	2	17 55 18.98	2.3723	26 57 41.5	2.290
3	16 9 7.26	2.1301	22 43 8.3	8.165	3	17 57 41.43	2.3760	26 59 54.5	2.142
4	16 11 15.24	2.1359	22 51 15.2	8.065	4	18 0 4.10	2.3795	27 1 58.6	1.994
5	16 13 23.57	2.1417	22 59 16.1	7.964	5	18 2 26.97	2.3829	27 3 53.8	1.846
6	16 15 32.24	2.1474	23 7 10.9	7.862	6	18 4 50.05	2.3863	27 5 40.1	1.697
7	16 17 41.26	2.1533	23 14 59.5	7.758	7	18 7 13.33	2.3896	27 7 17.4	1.546
8	16 19 50.64	2.1591	23 22 41.8	7.652	8	18 9 36.80	2.3927	27 8 45.6	1.394
9	16 22 0.36	2.1649	23 30 17.7	7.545	9	18 12 0.46	2.3958	27 10 4.7	1.243
10	16 24 10.43	2.1708	23 37 47.2	7.438	10	18 14 24.30	2.3987	27 11 14.7	1.091
11	16 26 20.85	2.1766	23 45 10.3	7.330	11	18 16 48.31	2.4016	27 12 15.6	0.938
12	16 28 31.62	2.1823	23 52 26.8	7.220	12	18 19 12.49	2.4043	27 13 7.3	0.785
13	16 30 42.73	2.1881	23 59 36.7	7.110	13	18 21 36.83	2.4070	27 13 49.8	0.631
14	16 32 54.19	2.1939	24 6 40.0	6.999	14	18 24 1.33	2.4095	27 14 23.0	0.477
15	16 35 6.00	2.1996	24 13 36.6	6.886	15	18 26 25.97	2.4118	27 14 47.0	0.323
16	16 37 18.15	2.2053	24 20 26.3	6.772	16	18 28 50.75	2.4141	27 15 1.7	0.167
17	16 39 30.64	2.2110	24 27 9.2	6.657	17	18 31 15.67	2.4163	27 15 7.0	− 0.010
18	16 41 43.47	2.2167	24 33 45.2	6.542	18	18 33 40.71	2.4183	27 15 2.9	+ 0.146
19	16 43 56.64	2.2223	24 40 14.2	6.424	19	18 36 5.87	2.4203	27 14 49.5	0.302
20	16 46 10.15	2.2279	24 46 36.1	6.306	20	18 38 31.15	2.4222	27 14 26.7	0.459
21	16 48 23.99	2.2336	24 52 50.9	6.187	21	18 40 56.54	2.4240	27 13 54.4	0.617
22	16 50 38.17	2.2391	24 58 58.5	6.066	22	18 43 22.03	2.4256	27 13 12.7	0.774
23	16 52 52.68	2.2446	25 4 58.8	5.944	23	18 45 47.61	2.4270	27 12 21.5	0.932
24	16 55 7.52	2.2500	S. 25 10 51.8	5.822	24	18 48 13.27	2.4283	S. 27 11 20.9	1.089

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	18 48 13.27	2.4283	S.27 11 20.9	1.089
1	18 50 39.01	2.4296	27 10 10.8	1.248
2	18 53 4.82	2.4307	27 8 51.2	1.407
3	18 55 30.70	2.4318	27 7 22.0	1.566
4	18 57 56.64	2.4327	27 5 43.3	1.724
5	19 0 22.63	2.4334	27 3 55.1	1.883
6	19 2 48.65	2.4340	27 1 57.3	2.042
7	19 5 14.71	2.4346	26 59 50.0	2.202
8	19 7 40.80	2.4350	26 57 33.1	2.361
9	19 10 6.91	2.4353	26 55 6.7	2.520
10	19 12 33.04	2.4355	26 52 30.7	2.679
11	19 14 59.17	2.4355	26 49 45.2	2.838
12	19 17 25.30	2.4355	26 46 50.2	2.997
13	19 19 51.43	2.4353	26 43 45.6	3.156
14	19 22 17.54	2.4350	26 40 31.5	3.315
15	19 24 43.63	2.4347	26 37 7.8	3.474
16	19 27 9.70	2.4342	26 33 34.6	3.632
17	19 29 35.73	2.4335	26 29 52.0	3.790
18	19 32 1.72	2.4327	26 25 59.8	3.949
19	19 34 27.66	2.4319	26 21 58.1	4.107
20	19 36 53.55	2.4310	26 17 47.0	4.264
21	19 39 19.38	2.4299	26 13 26.4	4.421
22	19 41 45.14	2.4287	26 8 56.4	4.578
23	19 44 10.83	2.4274	S.26 4 17.0	4.735

SUNDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	19 46 36.43	2.4260	S.25 59 28.2	4.891
1	19 49 1.95	2.4246	25 54 30.1	5.047
2	19 51 27.38	2.4230	25 49 22.6	5.202
3	19 53 52.71	2.4213	25 44 5.8	5.357
4	19 56 17.93	2.4195	25 38 39.7	5.512
5	19 58 43.05	2.4177	25 33 4.4	5.666
6	20 1 8.05	2.4157	25 27 19.8	5.819
7	20 3 32.93	2.4136	25 21 26.1	5.972
8	20 5 57.68	2.4114	25 15 23.2	6.124
9	20 8 22.29	2.4091	25 9 11.2	6.276
10	20 10 46.77	2.4068	25 2 50.1	6.427
11	20 13 11.11	2.4043	24 56 20.0	6.577
12	20 15 35.29	2.4017	24 49 40.8	6.727
13	20 17 59.32	2.3992	24 42 52.7	6.876
14	20 20 23.19	2.3966	24 35 55.7	7.024
15	20 22 46.91	2.3939	24 28 49.8	7.172
16	20 25 10.46	2.3910	24 21 35.1	7.318
17	20 27 33.83	2.3880	24 14 11.6	7.464
18	20 29 57.02	2.3850	24 6 39.4	7.609
19	20 32 20.03	2.3820	23 58 58.5	7.753
20	20 34 42.86	2.3789	23 51 9.0	7.897
21	20 37 5.50	2.3757	23 43 10.9	8.039
22	20 39 27.95	2.3725	23 35 4.3	8.181
23	20 41 50.20	2.3692	23 26 49.2	8.322
24	20 44 12.25	2.3658	S.23 18 25.7	8.462

MONDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 44 12.25	2.3658	S.23 18 25.7	8.462
1	20 46 34.10	2.3624	23 9 53.8	8.601
2	20 48 55.74	2.3589	23 1 13.6	8.738
3	20 51 17.17	2.3554	22 52 25.2	8.875
4	20 53 38.39	2.3518	22 43 28.6	9.011
5	20 55 59.39	2.3482	22 34 23.9	9.146
6	20 58 20.18	2.3446	22 25 11.1	9.280
7	21 0 40.75	2.3409	22 15 50.3	9.412
8	21 3 1.09	2.3371	22 6 21.6	9.544
9	21 5 21.20	2.3333	21 56 45.0	9.675
10	21 7 41.09	2.3296	21 47 0.6	9.805
11	21 10 0.75	2.3258	21 37 8.4	9.933
12	21 12 20.18	2.3219	21 27 8.6	10.060
13	21 14 39.38	2.3180	21 17 1.2	10.187
14	21 16 58.34	2.3141	21 6 46.2	10.313
15	21 19 17.07	2.3102	20 56 23.7	10.437
16	21 21 35.56	2.3062	20 45 53.8	10.559
17	21 23 53.81	2.3022	20 35 16.6	10.680
18	21 26 11.82	2.2982	20 24 32.2	10.800
19	21 28 29.59	2.2942	20 13 40.6	10.920
20	21 30 47.12	2.2902	20 2 41.8	11.038
21	21 33 4.41	2.2862	19 51 36.0	11.154
22	21 35 21.46	2.2822	19 40 23.3	11.270
23	21 37 38.27	2.2782	S.19 29 3.6	11.385

TUESDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 39 54.84	2.2742	S.19 17 37.1	11.498
1	21 42 11.17	2.2701	19 6 3.8	11.610
2	21 44 27.25	2.2660	18 54 23.9	11.720
3	21 46 43.09	2.2620	18 42 37.4	11.829
4	21 48 58.69	2.2580	18 30 44.4	11.937
5	21 51 14.05	2.2539	18 18 44.9	12.044
6	21 53 29.16	2.2499	18 6 39.1	12.149
7	21 55 44.04	2.2460	17 54 27.0	12.253
8	21 57 58.68	2.2420	17 42 8.7	12.357
9	22 0 13.08	2.2381	17 29 44.2	12.458
10	22 2 27.25	2.2342	17 17 13.7	12.558
11	22 4 41.18	2.2302	17 4 37.2	12.657
12	22 6 54.87	2.2263	16 51 54.9	12.754
13	22 9 8.33	2.2224	16 39 6.8	12.850
14	22 11 21.56	2.2186	16 26 12.9	12.946
15	22 13 34.56	2.2148	16 13 13.3	13.040
16	22 15 47.33	2.2110	16 0 8.1	13.132
17	22 17 59.88	2.2073	15 46 57.5	13.222
18	22 20 12.21	2.2036	15 33 41.5	13.312
19	22 22 24.31	2.1999	15 20 20.1	13.400
20	22 24 36.19	2.1963	15 6 53.5	13.486
21	22 26 47.86	2.1927	14 53 21.8	13.571
22	22 28 59.31	2.1891	14 39 45.0	13.656
23	22 31 10.55	2.1855	14 26 3.1	13.739
24	22 33 21.57	2.1820	S.14 12 16.3	13.820

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 33 21.57	2.1820	S. 14 12 16.3	13.820
1	22 35 32.39	2.1786	13 58 24.7	13.900
2	22 37 43.00	2.1752	13 44 28.3	13.978
3	22 39 53.41	2.1718	13 30 27.3	14.055
4	22 42 3.62	2.1685	13 16 21.7	14.131
5	22 44 13.63	2.1653	13 2 11.6	14.206
6	22 46 23.45	2.1621	12 47 57.0	14.279
7	22 48 33.08	2.1589	12 33 38.1	14.351
8	22 50 42.52	2.1557	12 19 14.9	14.421
9	22 52 51.77	2.1527	12 4 47.6	14.489
10	22 55 0.84	2.1498	11 50 16.2	14.557
11	22 57 9.74	2.1469	11 35 40.7	14.624
12	22 59 18.47	2.1441	11 21 1.3	14.689
13	23 1 27.03	2.1412	11 6 18.0	14.752
14	23 3 35.42	2.1384	10 51 31.0	14.813
15	23 5 43.64	2.1357	10 36 40.4	14.873
16	23 7 51.70	2.1331	10 21 46.2	14.933
17	23 9 59.61	2.1306	10 6 48.4	14.992
18	23 12 7.37	2.1281	9 51 47.2	15.048
19	23 14 14.98	2.1257	9 36 42.6	15.103
20	23 16 22.45	2.1233	9 21 34.8	15.157
21	23 18 29.77	2.1209	9 6 23.8	15.209
22	23 20 36.96	2.1188	8 51 9.7	15.260
23	23 22 44.02	2.1167	S. 8 35 52.6	15.309

THURSDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 24 50.96	2.1147	S. 8 20 32.6	15.357
1	23 26 57.78	2.1126	8 5 9.7	15.405
2	23 29 4.47	2.1105	7 49 44.0	15.450
3	23 31 11.04	2.1086	7 34 15.7	15.494
4	23 33 17.50	2.1068	7 18 44.8	15.537
5	23 35 23.86	2.1052	7 3 11.3	15.578
6	23 37 30.12	2.1036	6 47 35.4	15.617
7	23 39 36.29	2.1020	6 31 57.2	15.656
8	23 41 42.36	2.1004	6 16 16.7	15.693
9	23 43 48.34	2.0990	6 0 34.0	15.729
10	23 45 54.24	2.0977	5 44 49.2	15.763
11	23 48 0.06	2.0964	5 29 2.4	15.797
12	23 50 5.81	2.0953	5 13 13.6	15.828
13	23 52 11.49	2.0942	4 57 23.0	15.858
14	23 54 17.11	2.0931	4 41 30.6	15.887
15	23 56 22.66	2.0920	4 25 36.6	15.914
16	23 58 28.15	2.0912	4 9 41.0	15.940
17	0 0 33.60	2.0905	3 53 43.8	15.965
18	0 2 39.01	2.0898	3 37 45.2	15.988
19	0 4 44.38	2.0891	3 21 45.2	16.010
20	0 6 49.71	2.0885	3 5 44.0	16.030
21	0 8 55.00	2.0880	2 49 41.6	16.049
22	0 11 0.27	2.0877	2 33 38.1	16.067
23	0 13 5.53	2.0875	2 17 33.5	16.084
24	0 15 10.77	2.0873	S. 2 1 28.0	16.098

FRIDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 15 10.77	2.0873	S. 2 1 28.0	16.098
1	0 17 16.00	2.0871	1 45 21.7	16.112
2	0 19 21.22	2.0870	1 29 14.6	16.124
3	0 21 26.44	2.0870	1 13 6.8	16.135
4	0 23 31.66	2.0872	0 56 58.4	16.144
5	0 25 36.90	2.0874	0 40 49.5	16.152
6	0 27 42.15	2.0877	0 24 40.1	16.159
7	0 29 47.42	2.0881	S. 0 8 30.4	16.164
8	0 31 52.72	2.0885	N. 0 7 39.6	16.167
9	0 33 58.04	2.0890	0 23 49.7	16.169
10	0 36 3.40	2.0897	0 39 59.9	16.171
11	0 38 8.81	2.0905	0 56 10.2	16.171
12	0 40 14.26	2.0913	1 12 20.4	16.168
13	0 42 19.76	2.0922	1 28 30.4	16.165
14	0 44 25.32	2.0931	1 44 40.2	16.161
15	0 46 30.93	2.0941	2 0 49.7	16.155
16	0 48 36.61	2.0953	2 16 58.8	16.147
17	0 50 42.37	2.0966	2 33 7.4	16.138
18	0 52 48.20	2.0979	2 49 15.4	16.128
19	0 54 54.11	2.0992	3 5 22.8	16.117
20	0 57 0.11	2.1007	3 21 29.4	16.103
21	0 59 6.20	2.1023	3 37 35.1	16.088
22	1 1 12.39	2.1040	3 53 39.9	16.073
23	1 3 18.68	2.1057	N. 4 9 43.8	16.056

SATURDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	1 5 25.08	2.1076	N. 4 25 46.6	16.037
1	1 7 31.59	2.1095	4 41 48.2	16.016
2	1 9 38.22	2.1115	4 57 48.5	15.993
3	1 11 44.97	2.1136	5 13 47.4	15.970
4	1 13 51.85	2.1158	5 29 44.9	15.946
5	1 15 58.87	2.1181	5 45 40.9	15.920
6	1 18 6.02	2.1204	6 1 35.3	15.892
7	1 20 13.31	2.1227	6 17 28.0	15.863
8	1 22 20.75	2.1253	6 33 18.9	15.832
9	1 24 28.35	2.1279	6 49 7.9	15.800
10	1 26 36.10	2.1306	7 4 54.9	15.767
11	1 28 44.02	2.1334	7 20 39.9	15.732
12	1 30 52.11	2.1362	7 36 22.8	15.696
13	1 33 0.37	2.1391	7 52 3.4	15.658
14	1 35 8.80	2.1421	8 7 41.7	15.618
15	1 37 17.42	2.1452	8 23 17.6	15.577
16	1 39 26.23	2.1484	8 38 51.0	15.535
17	1 41 35.23	2.1516	8 54 21.8	15.492
18	1 43 44.42	2.1549	9 9 50.0	15.447
19	1 45 53.82	2.1584	9 25 15.4	15.399
20	1 48 3.43	2.1618	9 40 37.9	15.351
21	1 50 13.24	2.1653	9 55 57.5	15.302
22	1 52 23.27	2.1690	10 11 14.1	15.250
23	1 54 33.52	2.1727	10 26 27.5	15.196
24	1 56 43.99	2.1764	N. 10 41 37.6	15.141

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 56 43.99	2.1764	N.10 41 37.6	15.141
1	1 58 54.69	2.1803	10 56 44.4	15.086
2	2 1 5.63	2.1842	11 11 47.9	15.029
3	2 3 16.80	2.1882	11 26 47.9	14.970
4	2 5 28.21	2.1922	11 41 44.3	14.909
5	2 7 39.87	2.1964	11 56 37.0	14.847
6	2 9 51.78	2.2007	12 11 25.9	14.783
7	2 12 3.95	2.2049	12 26 10.9	14.718
8	2 14 16.37	2.2092	12 40 52.0	14.651
9	2 16 29.05	2.2136	12 55 29.0	14.582
10	2 18 42.00	2.2181	13 10 1.9	14.512
11	2 20 55.22	2.2226	13 24 30.5	14.441
12	2 23 8.71	2.2272	13 38 54.8	14.368
13	2 25 22.48	2.2319	13 53 14.7	14.293
14	2 27 36.53	2.2366	14 7 30.0	14.217
15	2 29 50.87	2.2413	14 21 40.7	14.139
16	2 32 5.49	2.2461	14 35 46.7	14.060
17	2 34 20.40	2.2510	14 49 47.9	13.978
18	2 36 35.61	2.2559	15 3 44.1	13.895
19	2 38 51.11	2.2608	15 17 35.3	13.812
20	2 41 6.91	2.2659	15 31 21.5	13.726
21	2 43 23.02	2.2710	15 45 2.4	13.638
22	2 45 39.43	2.2761	15 58 38.0	13.549
23	2 47 56.15	2.2813	N.16 12 8.3	13.459

MONDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 50 13.19	2.2866	N.16 25 33.1	13.367
1	2 52 30.54	2.2918	16 38 52.3	13.273
2	2 54 48.20	2.2970	16 52 5.8	13.177
3	2 57 6.18	2.3023	17 5 13.5	13.080
4	2 59 24.48	2.3077	17 18 15.4	12.982
5	3 1 43.10	2.3131	17 31 11.3	12.881
6	3 4 2.05	2.3186	17 44 1.1	12.779
7	3 6 21.33	2.3240	17 56 44.8	12.676
8	3 8 40.93	2.3294	18 9 22.2	12.570
9	3 11 0.86	2.3349	18 21 53.2	12.463
10	3 13 21.12	2.3404	18 34 17.8	12.355
11	3 15 41.71	2.3460	18 46 35.8	12.245
12	3 18 2.64	2.3516	18 58 47.2	12.134
13	3 20 23.90	2.3571	19 10 51.9	12.021
14	3 22 45.49	2.3627	19 22 49.7	11.906
15	3 25 7.42	2.3682	19 34 40.6	11.790
16	3 27 29.68	2.3738	19 46 24.5	11.672
17	3 29 52.28	2.3795	19 58 1.3	11.553
18	3 32 15.22	2.3851	20 9 30.9	11.432
19	3 34 38.49	2.3907	20 20 53.2	11.310
20	3 37 2.10	2.3963	20 32 8.1	11.186
21	3 39 26.04	2.4018	20 43 15.5	11.060
22	3 41 50.32	2.4074	20 54 15.3	10.932
23	3 44 14.93	2.4129	21 5 7.4	10.803
24	3 46 39.87	2.4185	N.21 15 51.7	10.673

TUESDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	3 46 39.87	2.4185	N.21 15 51.7	10.673
1	3 49 5.15	2.4241	21 26 28.2	10.549
2	3 51 30.76	2.4295	21 36 56.7	10.408
3	3 53 56.69	2.4349	21 47 17.2	10.274
4	3 56 22.95	2.4404	21 57 29.6	10.138
5	3 58 49.54	2.4459	22 7 33.8	10.000
6	4 1 16.46	2.4513	22 17 29.6	9.860
7	4 3 43.70	2.4566	22 27 17.0	9.720
8	4 6 11.26	2.4619	22 36 56.0	9.579
9	4 8 39.13	2.4671	22 46 26.5	9.436
10	4 11 7.31	2.4724	22 55 48.3	9.290
11	4 13 35.81	2.4776	23 5 1.3	9.143
12	4 16 4.62	2.4827	23 14 5.5	8.996
13	4 18 33.74	2.4877	23 23 0.8	8.847
14	4 21 3.15	2.4927	23 31 47.1	8.697
15	4 23 32.86	2.4977	23 40 24.4	8.545
16	4 26 2.87	2.5025	23 48 52.5	8.392
17	4 28 33.16	2.5072	23 57 11.4	8.238
18	4 31 3.74	2.5120	24 5 21.1	8.083
19	4 33 34.60	2.5167	24 13 21.4	7.926
20	4 36 5.74	2.5213	24 21 12.2	7.767
21	4 38 37.15	2.5258	24 28 53.5	7.608
22	4 41 8.83	2.5302	24 36 25.2	7.448
23	4 43 40.77	2.5344	N.24 43 47.3	7.287

WEDNESDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	4 46 12.96	2.5386	N.24 50 59.7	7.125
1	4 48 45.40	2.5427	24 58 2.3	6.961
2	4 51 18.09	2.5468	25 4 55.0	6.796
3	4 53 51.02	2.5507	25 11 37.8	6.630
4	4 56 24.18	2.5546	25 18 10.6	6.463
5	4 58 57.57	2.5583	25 24 33.4	6.296
6	5 1 31.17	2.5618	25 30 46.1	6.127
7	5 4 4.98	2.5652	25 36 48.6	5.957
8	5 6 39.00	2.5686	25 42 40.9	5.787
9	5 9 13.22	2.5719	25 48 23 0	5.615
10	5 11 47.63	2.5750	25 53 54.7	5.443
11	5 14 22.23	2.5781	25 59 16.1	5.270
12	5 16 57.00	2.5809	26 4 27.1	5.096
13	5 19 31.94	2.5837	26 9 27.6	4.921
14	5 22 7.04	2.5863	26 14 17.6	4.746
15	5 24 42.30	2.5888	26 18 57.1	4.570
16	5 27 17.70	2.5911	26 23 26.0	4.393
17	5 29 53.23	2.5932	26 27 44.2	4.215
18	5 32 28.89	2.5953	26 31 51.8	4.037
19	5 35 4.67	2.5972	26 35 48.7	3.859
20	5 37 40.56	2.5991	26 39 34.9	3.681
21	5 40 16.56	2.6007	26 43 10.4	3.502
22	5 42 52.65	2.6022	26 46 35.1	3.321
23	5 45 28.82	2.6035	26 49 48.9	3.140
24	5 48 5.07	2.6047	N.26 52 51.9	2.959

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	5 48 5.07	2.6047	N.26 52 51.9	2.959
1	5 50 41.38	2.6057	26 55 44.0	2.778
2	5 53 17.75	2.6066	26 58 25.3	2.597
3	5 55 54.17	2.6073	27 0 55.7	2.416
4	5 58 30.63	2.6078	27 3 15.2	2.234
5	6 1 7.11	2.6082	27 5 23.8	2.053
6	6 3 43.61	2.6084	27 7 21.6	1.872
7	6 6 20.12	2.6085	27 9 8.4	1.689
8	6 8 56.63	2.6085	27 10 44.3	1.507
9	6 11 33.14	2.6083	27 12 9.2	1.324
10	6 14 9.63	2.6078	27 13 23.2	1.142
11	6 16 46.08	2.6072	27 14 26.3	0.961
12	6 19 22.49	2.6064	27 15 18.5	0.779
13	6 21 58.85	2.6056	27 15 59.7	0.597
14	6 24 35.16	2.6046	27 16 30.1	0.416
15	6 27 11.40	2.6033	27 16 49.6	0.234
16	6 29 47.56	2.6020	27 16 58.2	+ 0.053
17	6 32 23.64	2.6005	27 16 56.0	- 0.127
18	6 34 59.62	2.5987	27 16 42.9	0.308
19	6 37 35.49	2.5969	27 16 19.0	0.488
20	6 40 11.25	2.5949	27 15 44.3	0.668
21	6 42 46.88	2.5927	27 14 58.8	0.847
22	6 45 22.38	2.5905	27 14 2.6	1.026
23	6 47 57.74	2.5880	N.27 12 55.7	1.204

FRIDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	6 50 32.94	2.5853	N.27 11 38.1	1.382
1	6 53 7.98	2.5826	27 10 9.8	1.559
2	6 55 42.85	2.5797	27 8 31.0	1.734
3	6 58 17.54	2.5766	27 6 41.6	1.911
4	7 0 52.04	2.5733	27 4 41.7	2.086
5	7 3 26.34	2.5699	27 2 31.3	2.261
6	7 6 0.43	2.5664	27 0 10.4	2.435
7	7 8 34.31	2.5628	26 57 39.1	2.607
8	7 11 7.97	2.5590	26 54 57.5	2.778
9	7 13 41.39	2.5550	26 52 5.7	2.949
10	7 16 14.57	2.5510	26 49 3.6	3.120
11	7 18 47.51	2.5468	26 45 51.3	3.289
12	7 21 20.19	2.5424	26 42 28.9	3.457
13	7 23 52.60	2.5379	26 38 56.4	3.625
14	7 26 24.74	2.5334	26 35 13.9	3.791
15	7 28 56.61	2.5287	26 31 21.5	3.956
16	7 31 28.19	2.5239	26 27 19.2	4.121
17	7 33 59.48	2.5189	26 23 7.0	4.284
18	7 36 30.46	2.5138	26 18 45.1	4.446
19	7 39 1.13	2.5086	26 14 13.5	4.607
20	7 41 31.49	2.5034	26 9 32.3	4.766
21	7 44 1.54	2.4981	26 4 41.6	4.924
22	7 46 31.26	2.4925	25 59 41.4	5.082
23	7 49 0.64	2.4869	25 54 31.8	5.238
24	7 51 29.68	2.4812	N.25 49 12.9	5.393

SATURDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	7 51 29.68	2.4812	N.25 49 12.9	5.393
1	7 53 58.38	2.4754	25 43 44.7	5.547
2	7 56 26.73	2.4695	25 38 7.3	5.698
3	7 58 54.72	2.4635	25 32 20.9	5.848
4	8 1 22.35	2.4574	25 26 25.5	5.998
5	8 3 49.61	2.4513	25 20 21.1	6.147
6	8 6 16.51	2.4452	25 14 7.9	6.293
7	8 8 43.03	2.4388	25 7 45.9	6.439
8	8 11 9.17	2.4324	25 1 15.2	6.582
9	8 13 34.92	2.4260	24 54 36.0	6.724
10	8 16 0.29	2.4195	24 47 48.3	6.866
11	8 18 25.26	2.4129	24 40 52.1	7.007
12	8 20 49.84	2.4063	24 33 47.5	7.145
13	8 23 14.02	2.3997	24 26 34.7	7.282
14	8 25 37.80	2.3929	24 19 13.7	7.417
15	8 28 1.17	2.3861	24 11 44.7	7.550
16	8 30 24.13	2.3792	24 4 7.7	7.682
17	8 32 46.68	2.3723	23 56 22.8	7.813
18	8 35 8.81	2.3653	23 48 30.1	7.943
19	8 37 30.52	2.3584	23 40 29.7	8.071
20	8 39 51.82	2.3515	23 32 21.6	8.197
21	8 42 12.70	2.3445	23 24 6.0	8.322
22	8 44 33.16	2.3374	23 15 43.0	8.445
23	8 46 53.19	2.3302	N.23 7 12.6	8.567

SUNDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	8 49 12.79	2.3231	N.22 58 35.0	8.687
1	8 51 31.96	2.3160	22 49 50.2	8.806
2	8 53 50.71	2.3089	22 40 58.3	8.922
3	8 56 9.03	2.3018	22 31 59.5	9.037
4	8 58 26.92	2.2946	22 22 53.8	9.152
5	9 0 44.38	2.2873	22 13 41.3	9.265
6	9 3 1.40	2.2801	22 4 22.0	9.376
7	9 5 17.99	2.2729	21 54 56.2	9.484
8	9 7 34.15	2.2657	21 45 23.9	9.592
9	9 9 49.88	2.2585	21 35 45.1	9.699
10	9 12 5.18	2.2513	21 26 0.0	9.803
11	9 14 20.04	2.2441	21 16 8.7	9.906
12	9 16 34.47	2.2369	21 6 11.3	10.007
13	9 18 48.47	2.2297	20 56 7.8	10.107
14	9 21 2.04	2.2226	20 45 58.4	10.206
15	9 23 15.18	2.2154	20 35 43.1	10.303
16	9 25 27.89	2.2083	20 25 22.0	10.399
17	9 27 40.18	2.2012	20 14 55.2	10.492
18	9 29 52.04	2.1942	20 4 22.9	10.584
19	9 32 3.48	2.1871	19 53 45.1	10.676
20	9 34 14.49	2.1799	19 43 1.8	10.766
21	9 36 25.07	2.1728	19 32 13.2	10.853
22	9 38 35.23	2.1659	19 21 19.4	10.940
23	9 40 44.98	2.1590	19 10 20.4	11.025
24	9 42 54.31	2.1521	N.18 59 16.4	11.108

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	9 42 54.31	2.1521	N.18 59 16.4	11.108
1	9 45 3.23	2.1452	18 48 7.4	11.191
2	9 47 11.74	2.1383	18 36 53.5	11.271
3	9 49 19.83	2.1315	18 25 34.9	11.349
4	9 51 27.52	2.1247	18 14 11.6	11.427
5	9 53 34.80	2.1179	18 2 43.7	11.503
6	9 55 41.67	2.1112	17 51 11.2	11.578
7	9 57 48.14	2.1046	17 39 34.3	11.652
8	9 59 54.22	2.0980	17 27 53.0	11.723
9	10 1 59.90	2.0914	17 16 7.5	11.793
10	10 4 5.19	2.0849	17 4 17.8	11.863
11	10 6 10.09	2.0784	16 52 23.9	11.932
12	10 8 14.60	2.0720	16 40 26.0	11.998
13	10 10 18.73	2.0657	16 28 24.1	12.064
14	10 12 22.48	2.0593	16 16 18.4	12.126
15	10 14 25.85	2.0530	16 4 9.0	12.188
16	10 16 28.84	2.0468	15 51 55.9	12.249
17	10 18 31.47	2.0407	15 39 39.1	12.309
18	10 20 33.73	2.0346	15 27 18.8	12.367
19	10 22 35.62	2.0286	15 14 55.1	12.424
20	10 24 37.16	2.0227	15 2 27.9	12.481
21	10 26 38.34	2.0167	14 49 57.4	12.535
22	10 28 39.16	2.0108	14 37 23.7	12.588
23	10 30 39.64	2.0051	N.14 24 46.8	12.641

TUESDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 32 39.77	1.9994	N.14 12 6.8	12.692
1	10 34 39.56	1.9937	13 59 23.8	12.741
2	10 36 39.01	1.9880	13 46 37.9	12.788
3	10 38 38.12	1.9824	13 33 49.2	12.835
4	10 40 36.90	1.9770	13 20 57.7	12.882
5	10 42 35.36	1.9717	13 8 3.4	12.928
6	10 44 33.50	1.9664	12 55 6.4	12.972
7	10 46 31.32	1.9611	12 42 6.8	13.013
8	10 48 28.83	1.9559	12 29 4.8	13.053
9	10 50 26.03	1.9507	12 16 0.4	13.093
10	10 52 22.92	1.9456	12 2 53.6	13.133
11	10 54 19.50	1.9405	11 49 44.4	13.172
12	10 56 15.78	1.9356	11 36 33.0	13.208
13	10 58 11.77	1.9308	11 23 19.5	13.243
14	11 0 7.48	1.9261	11 10 3.8	13.278
15	11 2 2.90	1.9214	10 56 46.1	13.312
16	11 3 58.04	1.9168	10 43 26.4	13.344
17	11 5 52.91	1.9122	10 30 4.8	13.376
18	11 7 47.50	1.9076	10 16 41.3	13.407
19	11 9 41.82	1.9032	10 3 16.0	13.436
20	11 11 35.88	1.8988	9 49 49.0	13.463
21	11 13 29.68	1.8946	9 36 20.4	13.490
22	11 15 23.23	1.8904	9 22 50.2	13.517
23	11 17 16.53	1.8862	9 9 18.4	13.542
24	11 19 9.58	1.8822	N. 8 55 45.1	13.567

WEDNESDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 19 9.58	1.8822	N. 8 55 45.1	13.567
1	11 21 2.39	1.8782	8 42 10.4	13.590
2	11 22 54.97	1.8743	8 28 34.3	13.612
3	11 24 47.31	1.8704	8 14 56.9	13.633
4	11 26 39.42	1.8667	8 1 18.3	13.653
5	11 28 31.31	1.8631	7 47 38.5	13.673
6	11 30 22.99	1.8595	7 33 57.5	13.692
7	11 32 14.45	1.8559	7 20 15.4	13.710
8	11 34 5.70	1.8524	7 6 32.3	13.726
9	11 35 56.74	1.8490	6 52 48.3	13.742
10	11 37 47.58	1.8458	6 39 3.3	13.757
11	11 39 38.23	1.8426	6 25 17.4	13.771
12	11 41 28.69	1.8394	6 11 30.8	13.784
13	11 43 18.96	1.8363	5 57 43.4	13.796
14	11 45 9.05	1.8333	5 43 55.3	13.807
15	11 46 58.96	1.8303	5 30 6.5	13.818
16	11 48 48.69	1.8275	5 16 17.1	13.828
17	11 50 38.26	1.8247	5 2 27.1	13.838
18	11 52 27.66	1.8220	4 48 36.6	13.846
19	11 54 16.90	1.8194	4 34 45.6	13.852
20	11 56 5.99	1.8169	4 20 54.3	13.858
21	11 57 54.93	1.8144	4 7 2.6	13.864
22	11 59 43.72	1.8120	3 53 10.6	13.869
23	12 1 32.37	1.8097	N. 3 39 18.3	13.873

THURSDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 3 20.88	1.8074	N. 3 25 25.8	13.877
1	12 5 9.26	1.8052	3 11 33.1	13.879
2	12 6 57.51	1.8032	2 57 40.3	13.880
3	12 8 45.64	1.8012	2 43 47.5	13.881
4	12 10 33.65	1.7992	2 29 54.6	13.882
5	12 12 21.55	1.7974	2 16 1.7	13.881
6	12 14 9.34	1.7956	2 2 8.9	13.879
7	12 15 57.02	1.7939	1 48 16.2	13.877
8	12 17 44.61	1.7923	1 34 23.6	13.875
9	12 19 32.10	1.7907	1 20 31.2	13.871
10	12 21 19.50	1.7892	1 6 39.1	13.866
11	12 23 6.81	1.7877	0 52 47.3	13.862
12	12 24 54.03	1.7864	0 38 55.7	13.857
13	12 26 41.18	1.7852	0 25 4.5	13.849
14	12 28 28.26	1.7841	N. 0 11 13.8	13.842
15	12 30 15.27	1.7829	S. 0 2 36.5	13.834
16	12 32 2.21	1.7819	0 16 26.3	13.826
17	12 33 49.10	1.7810	0 30 15.6	13.817
18	12 35 35.93	1.7801	0 44 4.3	13.806
19	12 37 22.71	1.7794	0 57 52.3	13.795
20	12 39 9.45	1.7787	1 11 39.7	13.784
21	12 40 56.15	1.7780	1 25 26.4	13.772
22	12 42 42.81	1.7773	1 39 12.3	13.759
23	12 44 29.43	1.7767	1 52 57.5	13.747
24	12 46 16.02	1.7763	S. 2 6 41.9	13.733

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
	h m s	s	° ′ ″	″
0	12 46 16.02	1.7763	S. 2 6 41.9	13.733
1	12 48 2.59	1.7761	2 20 25.4	13.718
2	12 49 49.15	1.7758	2 34 8.0	13.702
3	12 51 35.69	1.7756	2 47 49.6	13.685
4	12 53 22.22	1.7755	3 1 30.2	13.668
5	12 55 8.75	1.7754	3 15 9.8	13.651
6	12 56 55.27	1.7754	3 28 48.4	13.634
7	12 58 41.80	1.7755	3 42 25.9	13.615
8	13 0 28.33	1.7757	3 56 2.2	13.595
9	13 2 14.88	1.7760	4 9 37.3	13.575
10	13 4 1.45	1.7763	4 23 11.2	13.554
11	13 5 48.04	1.7767	4 36 43.8	13.533
12	13 7 34.65	1.7771	4 50 15.1	13.511
13	13 9 21.29	1.7777	5 3 45.1	13.488
14	13 11 7.97	1.7783	5 17 13.7	13.465
15	13 12 54.69	1.7790	5 30 40.9	13.441
16	13 14 41.45	1.7797	5 44 6.6	13.416
17	13 16 28.26	1.7805	5 57 30.8	13.391
18	13 18 15.11	1.7813	6 10 53.5	13.365
19	13 20 2.02	1.7824	6 24 14.6	13.338
20	13 21 49.00	1.7835	6 37 34.1	13.311
21	13 23 36.04	1.7846	6 50 51.9	13.283
22	13 25 23.15	1.7858	7 4 8.0	13.254
23	13 27 10.33	1.7870	S. 7 17 22.4	13.225

SATURDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
0	13 28 57.59	1.7883	S. 7 30 35.0	13.195
1	13 30 44.93	1.7897	7 43 45.8	13.164
2	13 32 32.36	1.7912	7 56 54.7	13.133
3	13 34 19.88	1.7927	8 10 1.8	13.102
4	13 36 7.49	1.7944	8 23 6.9	13.069
5	13 37 55.21	1.7962	8 36 10.0	13.036
6	13 39 43.03	1.7979	8 49 11.2	13.002
7	13 41 30.96	1.7997	9 2 10.3	12.967
8	13 43 19.00	1.8016	9 15 7.3	12.932
9	13 45 7.15	1.8035	9 28 2.1	12.896
10	13 46 55.42	1.8056	9 40 54.8	12.860
11	13 48 43.82	1.8077	9 53 45.3	12.822
12	13 50 32.35	1.8099	10 6 33.5	12.784
13	13 52 21.01	1.8122	10 19 19.4	12.746
14	13 54 9.81	1.8145	10 32 3.0	12.707
15	13 55 58.75	1.8168	10 44 44.2	12.667
16	13 57 47.83	1.8193	10 57 23.0	12.626
17	13 59 37.07	1.8219	11 9 59.3	12.584
18	14 1 26.46	1.8245	11 22 33.1	12.542
19	14 3 16.01	1.8272	11 35 4.4	12.500
20	14 5 5.72	1.8299	11 47 33.1	12.456
21	14 6 55.59	1.8326	11 59 59.1	12.412
22	14 8 45.63	1.8355	12 12 22.5	12.367
23	14 10 35.85	1.8385	12 24 43.2	12.322
24	14 12 26.25	1.8416	S. 12 37 1.1	12.275

SUNDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 12 26.25	1.8416	S. 12 37 1.1	12.275
1	14 14 16.83	1.8446	12 49 16.2	12.228
2	14 16 7.60	1.8477	13 1 28.5	12.181
3	14 17 58.55	1.8508	13 13 37.9	12.132
4	14 19 49.70	1.8541	13 25 44.4	12.082
5	14 21 41.05	1.8574	13 37 47.8	12.032
6	14 23 32.59	1.8607	13 49 48.2	11.982
7	14 25 24.34	1.8642	14 1 45.6	11.931
8	14 27 16.30	1.8678	14 13 39.9	11.878
9	14 29 8.48	1.8714	14 25 31.0	11.825
10	14 31 0.87	1.8750	14 37 18.9	11.771
11	14 32 53.48	1.8787	14 49 3.5	11.717
12	14 34 46.31	1.8824	15 0 44.9	11.662
13	14 36 39.37	1.8863	15 12 22.9	11.605
14	14 38 32.67	1.8902	15 23 57.5	11.548
15	14 40 26.20	1.8942	15 35 28.7	11.491
16	14 42 19.97	1.8982	15 46 56.4	11.432
17	14 44 13.98	1.9022	15 58 20.5	11.372
18	14 46 8.23	1.9063	16 9 41.1	11.312
19	14 48 2.73	1.9105	16 20 58.0	11.251
20	14 49 57.49	1.9147	16 32 11.2	11.190
21	14 51 52.50	1.9190	16 43 20.8	11.128
22	14 53 47.77	1.9234	16 54 26.6	11.064
23	14 55 43.31	1.9278	S. 17 5 28.5	10.999

MONDAY, AUGUST 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 57 39.11	1.9322	S. 17 16 26.5	10.933

PHASES OF THE MOON.

		d	h	m
☽ First Quarter . .	July	1	14	13.0
○ Full Moon		9	13	43.5
☾ Last Quarter		16	13	47.6
● New Moon		23	11	30.6
☽ First Quarter		31	7	45.0

		d	h
☾ Apogee	July	3	0.2
☾ Perigee		17	14.5
☾ Apogee		30	18.5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	III^{h}.	P. L. of Diff.	VI^{h}.	P. L. of Diff.	IX^{h}.	P. L. of Diff.
1	Sun	W.	83° 30′ 23″	3390	84° 52′ 51″	3398	86° 15′ 10″	3404	87° 37′ 22″	3411
	Regulus	W.	35 18 19	3058	36 47 20	3061	38 16 17	3065	39 45 9	3069
	Antares	E.	65 9 49	3023	63 40 5	3030	62 10 30	3036	60 41 2	3043
2	Sun	W.	94 26 47	3434	95 48 25	3437	97 10 0	3439	98 31 32	3441
	Regulus	W.	47 8 30	3082	48 37 2	3084	50 5 31	3085	51 33 59	3087
	Saturn	W.	20 54 30	3095	22 22 46	3096	23 51 1	3096	25 19 15	3097
	Antares	E.	53 15 20	3065	51 46 27	3067	50 17 37	3070	48 48 51	3072
3	Sun	W.	105 18 48	3445	106 40 14	3444	108 1 41	3442	109 23 10	3441
	Regulus	W.	58 56 10	3084	60 24 39	3083	61 53 9	3081	63 21 42	3078
	Saturn	W.	32 40 19	3096	34 8 34	3094	35 36 51	3092	37 5 10	3091
	Antares	E.	41 25 28	3077	39 56 50	3076	38 28 11	3075	36 59 31	3074
	α Aquilæ	E.	91 49 43	3894	90 36 17	3892	89 22 49	3891	88 9 20	3890
4	Sun	W.	116 11 13	3424	117 33 2	3421	118 54 55	3415	120 16 54	3411
	Regulus	W.	70 45 20	3060	72 14 18	3056	73 43 21	3051	75 12 31	3046
	Saturn	W.	44 27 34	3073	45 56 17	3069	47 25 5	3063	48 54 0	3058
	Spica	W.	16 56 50	3165	18 23 41	3144	19 50 57	3126	21 18 35	3110
	α Aquilæ	E.	82 1 56	3896	80 48 32	3898	79 35 10	3901	78 21 51	3906
5	Sun	W.	127 8 23	3379	128 31 3	3372	129 53 52	3365	131 16 49	3358
	Regulus	W.	82 40 10	3013	84 10 7	3005	85 40 13	2997	87 10 29	2989
	Saturn	W.	56 20 21	3026	57 50 2	3018	59 19 53	3010	60 49 53	3002
	Spica	W.	28 41 15	3044	30 10 33	3033	31 40 5	3022	33 9 51	3011
	α Aquilæ	E.	72 16 37	3938	71 3 56	3948	69 51 25	3958	68 39 4	3971
	Mars	E.	86 12 41	2997	84 42 25	2989	83 11 59	2981	81 41 22	2973
	Fomalhaut	E.	100 24 1	3181	98 57 29	3173	97 30 47	3163	96 3 54	3154
6	Regulus	W.	94 44 27	2946	96 15 48	2935	97 47 22	2926	99 19 8	2916
	Saturn	W.	68 22 31	2958	69 53 37	2948	71 24 55	2938	72 56 26	2928
	Spica	W.	40 42 3	2956	42 13 11	2946	43 44 32	2935	45 16 7	2923
	α Aquilæ	E.	62 40 59	4059	61 30 17	4083	60 19 59	4109	59 10 6	4138
	Mars	E.	74 5 30	2925	72 33 43	2916	71 1 44	2905	69 29 31	2894
	Fomalhaut	E.	88 46 44	3109	87 18 45	3100	85 50 35	3091	84 22 14	3081
7	Saturn	W.	80 37 15	2876	82 10 5	2864	83 43 10	2853	85 16 29	2842
	Spica	W.	52 57 41	2866	54 30 44	2854	56 4 2	2843	57 37 34	2831
	α Aquilæ	E.	53 26 44	4340	52 22 28	4394	51 17 1	4454	50 12 28	4519
	Mars	E.	61 45 0	2839	60 11 23	2828	58 37 31	2816	57 3 24	2804
	Fomalhaut	E.	76 57 43	3038	75 28 17	3029	73 58 40	3022	72 28 54	3014
	α Pegasi	E.	97 6 37	3229	95 41 2	3216	94 15 12	3204	92 49 7	3191
8	Spica	W.	65 29 6	2772	67 4 11	2760	68 39 31	2748	70 15 7	2737
	Antares	W.	19 36 56	2796	21 11 29	2779	22 46 25	2763	24 21 41	2748
	Mars	E.	49 8 57	2745	47 33 17	2733	45 57 21	2721	44 21 9	2709
	Fomalhaut	E.	64 57 46	2980	63 27 8	2975	61 56 24	2970	60 25 34	2967
	α Pegasi	E.	85 35 12	3137	84 7 47	3127	82 40 10	3118	81 12 22	3110
9	Spica	W.	78 16 58	2679	79 54 6	2667	81 31 30	2656	83 9 9	2646
	Antares	W.	32 22 39	2683	33 59 42	2670	35 37 2	2658	37 14 38	2646
	Mars	E.	36 16 12	2650	34 38 25	2639	33 0 23	2627	31 22 5	2615

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	88° 59′ 26″	3416	90° 21′ 24″	3421	91° 43′ 17″	3426	93° 5′ 4″	3430
	Regulus	W.	41 13 56	3073	42 42 39	3075	44 11 19	3078	45 39 56	3080
	Antares	E.	59 11 42	3047	57 42 28	3052	56 13 20	3057	54 44 18	3060
2	Sun	W.	99 53 2	3443	101 14 30	3445	102 35 56	3445	103 57 22	3445
	Regulus	W.	53 2 25	3087	54 30 51	3087	55 59 17	3087	57 27 43	3086
	Saturn	W.	26 47 28	3097	28 15 41	3098	29 43 53	3097	31 12 6	3097
	Antares	E.	47 20 7	3073	45 51 25	3075	44 22 45	3076	42 54 6	3077
3	Sun	W.	110 44 40	3438	112 6 13	3436	113 27 49	3432	114 49 29	3429
	Regulus	W.	64 50 18	3076	66 18 57	3073	67 47 40	3069	69 16 28	3065
	Saturn	W.	38 33 31	3087	40 1 56	3085	41 30 24	3081	42 58 57	3078
	Antares	E.	35 30 50	3073	34 2 7	3071	32 33 22	3069	31 4 34	3067
	α Aquilæ	E.	86 55 50	3890	85 42 20	3891	84 28 51	3892	83 15 23	3893
4	Sun	W.	121 38 58	3405	123 1 9	3400	124 23 26	3393	125 45 51	3386
	Regulus	W.	76 41 47	3039	78 11 11	3034	79 40 42	3026	81 10 22	3020
	Saturn	W.	50 23 1	3052	51 52 9	3046	53 21 25	3039	54 50 49	3033
	Spica	W.	22 46 33	3095	24 14 49	3081	25 43 22	3068	27 12 11	3056
	α Aquilæ	E.	77 8 37	3911	75 55 28	3916	74 42 24	3922	73 29 27	3929
5	Sun	W.	132 39 54	3350	134 3 8	3341	135 26 32	3333	136 50 5	3325
	Regulus	W.	88 40 55	2981	90 11 32	2973	91 42 19	2964	93 13 17	2954
	Saturn	W.	62 20 3	2993	63 50 24	2985	65 20 55	2977	66 51 37	2967
	Spica	W.	34 39 50	3000	36 10 3	2989	37 40 29	2978	39 11 9	2967
	α Aquilæ	E.	67 26 56	3985	66 15 2	4001	65 3 23	4018	63 52 1	4038
	Mars	E.	80 10 35	2963	78 39 36	2954	77 8 26	2945	75 37 4	2935
	Fomalhaut	E.	94 36 50	3145	93 9 35	3136	91 42 9	3127	90 14 32	3118
6	Regulus	W.	100 51 7	2905	102 23 19	2896	103 55 43	2885	105 28 21	2875
	Saturn	W.	74 28 9	2918	76 0 5	2907	77 32 15	2897	79 4 38	2886
	Spica	W.	46 47 57	2912	48 20 1	2900	49 52 20	2889	51 24 53	2877
	α Aquilæ	E.	58 0 41	4171	56 51 47	4207	55 43 28	4246	54 35 45	4291
	Mars	E.	67 57 5	2883	66 24 25	2873	64 51 31	2862	63 18 23	2850
	Fomalhaut	E.	82 53 41	3073	81 24 58	3064	79 56 4	3055	78 26 59	3046
7	Saturn	W.	86 50 3	2831	88 23 51	2819	89 57 54	2808	91 32 12	2796
	Spica	W.	59 11 22	2819	60 45 25	2808	62 19 43	2795	63 54 17	2784
	α Aquilæ	E.	49 8 53	4593	48 6 22	4676	47 5 2	4766	46 4 58	4866
	Mars	E.	55 29 1	2792	53 54 23	2781	52 19 30	2769	50 44 21	2757
	Fomalhaut	E.	70 58 58	3006	69 28 53	2999	67 58 39	2992	66 28 16	2986
	α Pegasi	E.	91 22 47	3179	89 56 13	3168	88 29 26	3157	87 2 25	3147
8	Spica	W.	71 50 58	2725	73 27 5	2713	75 3 27	2701	76 40 5	2690
	Antares	W.	25 57 17	2735	27 33 11	2721	29 9 23	2708	30 45 52	2695
	Mars	E.	42 44 41	2697	41 7 57	2686	39 30 58	2674	37 53 43	2662
	Fomalhaut	E.	58 54 40	2964	57 23 42	2961	55 52 40	2960	54 21 37	2960
	α Pegasi	E.	79 44 25	3102	78 16 18	3096	76 48 3	3089	75 19 40	3084
9	Spica	W.	84 47 2	2635	86 25 10	2624	88 3 33	2613	89 42 10	2602
	Antares	W.	38 52 31	2635	40 30 39	2623	42 9 3	2612	43 47 42	2600
	Mars	E.	29 43 31	2605	28 4 43	2593	26 25 39	2583	24 46 20	2572

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P.L. of Diff.	IIIh.	P.L. of Diff.	VIh.	P.L. of Diff.	IXh.	P.L. of Diff.
9	Fomalhaut	E.	52° 50′ 34″	2961	51° 19′ 32″	2964	49° 48′ 34″	2968	48° 17′ 41″	2973
	α Pegasi	E.	73 51 11	3079	72 22 36	3076	70 53 57	3073	69 25 14	3071
	JUPITER	E.	102 4 44	2704	100 28 10	2692	98 51 20	2681	97 14 16	2670
10	Spica	W.	91 21 2	2592	93 0 8	2582	94 39 28	2572	96 19 2	2561
	Antares	W.	45 26 37	2590	47 5 46	2579	48 45 10	2569	50 24 48	2558
	Fomalhaut	E.	40 46 2	3040	39 16 39	3064	37 47 45	3091	36 19 25	3126
	α Pegasi	E.	62 1 36	3080	60 33 2	3087	59 4 36	3095	57 36 20	3105
	JUPITER	E.	89 5 8	2616	87 26 35	2605	85 47 47	2596	84 8 46	2585
	α Arietis	E.	102 53 46	2661	101 16 14	2650	99 38 27	2639	98 0 25	2628
11	Spica	W.	104 40 11	2515	106 21 3	2507	108 2 6	2499	109 43 21	2490
	Antares	W.	58 46 27	2510	60 27 26	2501	62 8 38	2492	63 50 2	2483
	α Pegasi	E.	50 19 1	3193	48 52 44	3222	47 27 1	3253	46 1 55	3289
	JUPITER	E.	75 50 16	2538	74 9 55	2529	72 29 21	2520	70 48 35	2511
	α Arietis	E.	89 46 47	2580	88 7 25	2572	86 27 51	2564	84 48 6	2555
12	Antares	W.	72 19 59	2444	74 2 31	2436	75 45 14	2429	77 28 7	2422
	JUPITER	E.	62 21 51	2471	60 39 57	2464	58 57 53	2456	57 15 38	2450
	α Arietis	E.	76 26 40	2520	74 45 55	2514	73 5 1	2508	71 23 59	2503
	Aldebaran	E.	106 44 27	2479	105 2 44	2472	103 20 51	2464	101 38 47	2457
13	α Aquilæ	W.	47 26 50	4230	48 34 48	4125	49 44 26	4030	50 55 36	3944
	JUPITER	E.	48 42 2	2417	46 58 52	2412	45 15 34	2405	43 32 7	2401
	α Arietis	E.	62 57 15	2484	61 15 39	2482	59 34 0	2480	57 52 18	2479
	Aldebaran	E.	93 6 0	2424	91 23 0	2419	89 39 52	2413	87 56 36	2408
	SUN	E.	136 34 12	2726	134 58 7	2718	133 21 51	2711	131 45 26	2704
14	α Aquilæ	W.	57 11 0	3609	58 29 25	3558	59 48 45	3511	61 8 57	3468
	MARS	W.	31 52 26	2311	33 38 9	2307	35 23 59	2302	37 9 56	2298
	JUPITER	E.	34 53 4	2376	33 8 55	2371	31 24 39	2367	29 40 17	2363
	α Arietis	E.	49 23 40	2482	47 42 2	2486	46 0 29	2490	44 19 2	2496
	Aldebaran	E.	79 18 30	2385	77 34 34	2382	75 50 33	2378	74 6 26	2375
	SUN	E.	123 41 11	2675	122 3 57	2669	120 26 35	2663	118 49 6	2659
15	α Aquilæ	W.	68 0 52	3300	69 25 4	3273	70 49 47	3250	72 14 57	3229
	MARS	W.	46 1 13	2278	47 47 45	2274	49 34 23	2270	51 21 6	2267
	Fomalhaut	W.	34 25 5	2905	35 57 18	2853	37 30 37	2809	39 4 53	2769
	Aldebaran	E.	65 24 51	2362	63 40 22	2360	61 55 50	2359	60 11 16	2358
	SUN	E.	110 40 12	2638	109 2 9	2635	107 24 1	2631	105 45 48	2628
16	α Aquilæ	W.	79 26 20	3151	80 53 28	3140	82 20 49	3131	83 48 21	3124
	MARS	W.	60 15 50	2252	62 3 0	2250	63 50 13	2248	65 37 29	2245
	Fomalhaut	W.	47 7 27	2630	48 45 41	2610	50 24 23	2593	52 3 28	2576
	Aldebaran	E.	51 28 15	2358	49 43 40	2359	47 59 7	2361	46 14 36	2364
	SUN	E.	97 33 43	2614	95 55 7	2612	94 16 28	2610	92 37 46	2608
17	MARS	W.	74 34 37	2237	76 22 10	2235	78 9 45	2234	79 57 22	2233
	Fomalhaut	W.	60 23 49	2517	62 4 39	2508	63 45 41	2501	65 26 53	2494
	α Pegasi	W.	43 22 1	3136	44 49 27	3084	46 17 56	3037	47 47 23	2994
	Aldebaran	E.	37 33 19	2389	35 49 28	2397	34 5 49	2408	32 22 25	2420
	SUN	E.	84 23 43	2601	82 44 49	2600	81 5 54	2599	79 26 57	2599

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
9	Fomalhaut	E.	46 46 55	2981	45 16 19	2992	43 45 56	3005	42 15 49	3021
	α Pegasi	E.	67 56 29	3070	66 27 43	3071	64 58 58	3073	63 30 15	3076
	Jupiter	E.	95 36 56	2660	93 59 22	2648	92 21 32	2637	90 43 27	2626
10	Spica	W.	97 58 50	2552	99 38 51	2543	101 19 5	2533	102 59 32	2525
	Antares	W.	52 4 41	2548	53 44 47	2538	55 25 7	2529	57 5 40	2519
	Fomalhaut	E.	34 51 47	3167	33 24 58	3214	31 59 6	3273	30 34 23	3344
	α Pegasi	E.	56 8 16	3117	54 40 27	3132	53 12 56	3149	51 45 46	3170
	Jupiter	E.	82 29 31	2575	80 50 2	2566	79 10 20	2556	77 30 25	2546
	α Arietis	E.	96 22 8	2618	94 43 38	2608	93 4 54	2599	91 25 57	2589
11	Spica	W.	111 24 48	2482	113 6 26	2475	114 48 15	2467	116 30 15	2460
	Antares	W.	65 31 39	2475	67 13 27	2467	68 55 27	2459	70 37 38	2452
	α Pegasi	E.	44 37 31	3332	43 13 56	3380	41 51 17	3436	40 29 41	3500
	Jupiter	E.	69 7 37	2502	67 26 27	2494	65 45 6	2487	64 3 34	2479
	α Arietis	E.	83 8 9	2548	81 28 2	2540	79 47 44	2533	78 7 17	2526
12	Antares	W.	79 11 10	2416	80 54 22	2409	82 37 44	2403	84 21 15	2397
	Jupiter	E.	55 33 14	2443	53 50 40	2436	52 7 56	2429	50 25 3	2424
	α Arietis	E.	69 42 50	2498	68 1 34	2494	66 20 13	2490	64 38 46	2487
	Aldebaran	E.	99 56 33	2450	98 14 9	2443	96 31 35	2436	94 48 52	2430
13	α Aquilæ	W.	52 8 11	3865	53 22 6	3792	54 37 16	3726	55 53 36	3665
	Jupiter	E.	41 48 33	2396	40 4 52	2390	38 21 3	2385	36 37 7	2380
	α Arietis	E.	56 10 35	2478	54 28 51	2477	52 47 6	2478	51 5 22	2480
	Aldebaran	E.	86 13 12	2403	84 29 41	2398	82 46 4	2394	81 2 20	2389
	Sun	E.	130 8 52	2698	128 32 9	2692	126 55 18	2685	125 18 18	2680
14	α Aquilæ	W.	62 29 57	3428	63 51 42	3392	65 14 8	3358	66 37 12	3327
	Mars	W.	38 55 59	2294	40 42 8	2289	42 28 24	2285	44 14 46	2281
	Jupiter	E.	27 55 49	2359	26 11 16	2355	24 26 37	2352	22 41 53	2348
	α Arietis	E.	42 37 43	2503	40 56 34	2512	39 15 38	2523	37 34 57	2538
	Aldebaran	E.	72 22 15	2371	70 37 59	2369	68 53 40	2366	67 9 17	2364
	Sun	E.	117 11 31	2655	115 33 50	2650	113 56 3	2646	112 18 10	2642
15	α Aquilæ	W.	73 40 32	3209	75 6 30	3192	76 32 49	3177	77 59 26	3163
	Mars	W.	53 7 54	2264	54 54 46	2261	56 41 43	2258	58 28 44	2255
	Fomalhaut	W.	40 40 1	2735	42 15 55	2704	43 52 30	2676	45 29 42	2652
	Aldebaran	E.	58 26 41	2357	56 42 5	2357	54 57 28	2357	53 12 51	2357
	Sun	E.	104 7 31	2625	102 29 10	2622	100 50 45	2619	99 12 16	2616
16	α Aquilæ	W.	85 16 2	3118	86 43 50	3113	88 11 44	3110	89 39 41	3108
	Mars	W.	67 24 49	2243	69 12 12	2241	70 59 38	2240	72 47 6	2238
	Fomalhaut	W.	53 42 56	2561	55 22 44	2548	57 2 50	2537	58 43 12	2526
	Aldebaran	E.	44 30 9	2367	42 45 47	2371	41 1 30	2375	39 17 20	2382
	Sun	E.	90 59 2	2606	89 20 15	2604	87 41 26	2603	86 2 35	2602
17	**Mars**	W.	81 45 1	2232	83 32 41	2231	85 20 23	2230	87 8 6	2230
	Fomalhaut	W.	67 8 15	2487	68 49 46	2482	70 31 24	2477	72 13 9	2474
	α Pegasi	W.	49 17 43	2956	50 48 51	2923	52 20 41	2892	53 53 10	2864
	Aldebaran	E.	30 39 19	2435	28 56 34	2453	27 14 15	2475	25 32 27	2502
	Sun	E.	77 48 0	2598	76 9 2	2598	74 30 4	2598	72 51 6	2599

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
18	**Mars**	W.	88° 55′ 49″	2930	90° 43′ 32″	2929	92° 31′ 16″	2929	94° 19′ 0″	2930
	Fomalhaut	W.	73 54 59	2470	75 36 54	2467	77 18 54	2465	79 0 56	2464
	α Pegasi	W.	55 26 15	2840	56 59 51	2818	58 33 56	2798	60 8 26	2781
	Jupiter	W.	21 16 43	2304	23 2 36	2304	24 48 29	2304	26 34 22	2305
	Sun	E.	71 12 9	2599	69 33 13	2599	67 54 17	2601	66 15 23	2601
19	Fomalhaut	W.	87 31 22	2465	89 13 25	2466	90 55 26	2469	92 37 23	2472
	α Pegasi	W.	68 5 54	2719	69 42 9	2711	71 18 34	2704	72 55 8	2696
	Jupiter	W.	35 23 29	2311	37 9 13	2313	38 54 54	2315	40 40 32	2317
	α Arietis	W.	24 28 36	2735	26 4 29	2684	27 41 31	2642	29 19 29	2607
	Sun	E.	58 1 24	2612	56 22 46	2615	54 44 11	2618	53 5 41	2622
20	α Pegasi	W.	80 59 18	2688	82 36 14	2689	84 13 9	2691	85 50 1	2693
	Jupiter	W.	49 27 47	2332	51 13 0	2335	52 58 8	2339	54 43 10	2344
	α Arietis	W.	37 38 40	2507	39 19 43	2497	41 1 0	2489	42 42 29	2482
	Sun	E.	44 54 36	2646	43 16 44	2653	41 39 1	2660	40 1 27	2666
21	**Jupiter**	W.	63 26 35	2371	65 10 52	2376	66 55 1	2382	68 39 1	2389
	α Arietis	W.	51 11 35	2469	52 53 32	2470	54 35 28	2471	56 17 22	2474
	Aldebaran	W.	21 1 30	2632	22 39 41	2601	24 18 34	2577	25 58 0	2559
	Sun	E.	31 56 24	2716	30 20 5	2729	28 44 3	2743	27 8 20	2759
25	**Sun**	W.	19 21 0	3143	20 48 17	3141	22 15 37	3140	23 42 58	3143
	Saturn	E.	34 38 47	2707	33 2 16	2719	31 26 2	2733	29 50 6	2747
	Spica	E.	61 1 22	2684	59 24 21	2698	57 47 38	2711	56 11 13	2725
26	**Sun**	W.	30 58 24	3175	32 25 3	3184	33 51 31	3194	35 17 47	3204
	Spica	E.	48 13 35	2792	46 38 57	2805	45 4 36	2819	43 30 33	2833
	Antares	E.	94 4 7	2778	92 29 10	2791	90 54 30	2803	89 20 6	2816
27	**Sun**	W.	42 26 7	3257	43 51 9	3267	45 15 59	3277	46 40 37	3288
	Regulus	W.	19 7 48	2985	20 38 19	2981	22 8 56	2980	23 39 34	2980
	Spica	E.	35 44 42	2901	34 12 25	2915	32 40 25	2929	31 8 43	2942
	Antares	E.	81 32 6	2876	79 59 16	2887	78 26 40	2898	76 54 18	2909
28	**Sun**	W.	53 40 45	3338	55 4 13	3347	56 27 30	3356	57 50 37	3365
	Regulus	W.	31 11 56	3001	32 42 7	3007	34 12 11	3013	35 42 8	3019
	Antares	E.	69 15 54	2960	67 44 52	2969	66 14 0	2978	64 43 20	2987
29	**Sun**	W.	64 43 51	3402	66 6 5	3409	67 28 11	3415	68 50 11	3420
	Regulus	W.	43 10 6	3046	44 39 22	3052	46 8 31	3056	47 37 35	3060
	Antares	E.	57 12 33	3025	55 42 51	3031	54 13 17	3037	52 43 50	3043
30	**Sun**	W.	75 38 47	3441	77 0 17	3444	78 21 44	3446	79 43 8	3448
	Saturn	W.	26 36 55	3099	28 5 6	3101	29 33 14	3103	31 1 20	3104
	Antares	E.	45 18 10	3065	43 49 17	3068	42 20 28	3071	40 51 43	3073
	α Aquilæ	E.	95 11 17	3890	93 57 47	3890	92 44 17	3890	91 30 47	3890
31	**Sun**	W.	86 29 50	3450	87 51 10	3448	89 12 32	3446	90 33 56	3445
	Saturn	W.	38 21 37	3105	39 49 41	3103	41 17 47	3101	42 45 55	3099
	Antares	E.	33 28 27	3078	31 59 51	3078	30 31 15	3078	29 2 38	3078
	α Aquilæ	E.	85 23 34	3900	84 10 14	3904	82 56 58	3908	81 43 46	3912

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
18	Mars	W.	96° 6′ 43″	2230	97° 54′ 26″	2231	99° 42′ 7″	2232	101° 29′ 47″	2233
	Fomalhaut	W.	80 43 0	2463	82 25 5	2462	84 7 11	2462	85 49 17	2463
	α Pegasi	W.	61 43 19	2766	63 18 32	2751	64 54 4	2739	66 29 52	2729
	Jupiter	W.	28 20 14	2306	30 6 5	2307	31 51 55	2308	33 37 43	2309
	Sun	E.	64 36 30	2603	62 57 39	2605	61 18 51	2607	59 40 6	2610
19	Fomalhaut	W.	94 19 16	2475	96 1 4	2479	97 42 47	2484	99 24 23	2489
	α Pegasi	W.	74 31 50	2695	76 8 37	2692	77 45 28	2689	79 22 22	2688
	Jupiter	W.	42 26 7	2320	44 11 38	2322	45 57 6	2325	47 42 29	2328
	α Arietis	W.	30 58 14	2579	32 37 38	2556	34 17 33	2537	35 57 55	2520
	Sun	E.	51 27 16	2626	49 48 57	2630	48 10 43	2635	46 32 36	2640
20	α Pegasi	W.	87 26 50	2697	89 3 34	2701	90 40 12	2707	92 16 43	2713
	Jupiter	W.	56 28 5	2348	58 12 54	2354	59 57 35	2359	61 42 9	2364
	α Arietis	W.	44 24 7	2477	46 5 53	2473	47 47 44	2471	49 29 38	2469
	Sun	E.	38 24 2	2675	36 46 49	2684	35 9 47	2693	33 32 58	2704
21	Jupiter	W.	70 22 51	2396	72 6 31	2403	73 50 1	2411	75 33 20	2419
	α Arietis	W.	57 59 12	2477	59 40 58	2480	61 22 39	2485	63 4 14	2490
	Aldebaran	W.	27 37 52	2544	29 18 4	2534	30 58 30	2527	32 39 6	2522
	Sun	E.	25 32 58	2777	23 58 0	2797	22 23 28	2821	20 49 27	2848
25	Sun	W.	25 10 16	3147	26 37 29	3152	28 4 36	3158	29 31 34	3167
	Saturn	E.	28 14 28	2760	26 39 8	2774	25 4 6	2788	23 29 23	2802
	Spica	E.	54 35 6	2738	52 59 17	2751	51 23 45	2765	49 48 31	2779
26	Sun	W.	36 43 52	3214	38 9 45	3225	39 35 25	3236	41 0 52	3246
	Spica	E.	41 56 48	2846	40 23 20	2860	38 50 10	2873	37 17 17	2887
	Antares	E.	87 45 59	2828	86 12 8	2840	84 38 32	2852	83 5 11	2864
27	Sun	W.	48 5 2	3299	49 29 15	3308	50 53 17	3319	52 17 7	3329
	Regulus	W.	25 10 12	2983	26 40 46	2987	28 11 15	2992	29 41 38	2996
	Spica	E.	29 37 18	2958	28 6 12	2972	26 35 24	2987	25 4 55	3003
	Antares	E.	75 22 11	2920	73 50 17	2931	72 18 37	2940	70 47 9	2950
28	Sun	W.	59 13 34	3372	60 36 22	3381	61 59 0	3388	63 21 30	3396
	Regulus	W.	37 11 57	3025	38 41 39	3030	40 11 15	3035	41 40 44	3041
	Antares	E.	63 12 51	2995	61 42 32	3003	60 12 23	3010	58 42 23	3018
29	Sun	W.	70 12 5	3425	71 33 53	3431	72 55 35	3434	74 17 13	3438
	Regulus	W.	49 6 34	3064	50 35 28	3068	52 4 17	3070	53 33 3	3073
	Antares	E.	51 14 30	3047	49 45 16	3053	48 16 9	3057	46 47 7	3061
30	Sun	W.	81 4 30	3449	82 25 51	3450	83 47 11	3451	85 8 30	3450
	Saturn	W.	32 29 25	3105	33 57 28	3105	35 25 31	3105	36 53 34	3105
	Antares	E.	39 23 0	3075	37 54 20	3076	36 25 41	3078	34 57 4	3078
	α Aquilæ	E.	90 17 17	3892	89 3 49	3893	87 50 22	3895	86 36 57	3897
31	Sun	W.	91 55 22	3442	93 16 51	3438	94 38 24	3434	96 0 2	3431
	Saturn	W.	44 14 6	3096	45 42 20	3093	47 10 38	3090	48 39 0	3086
	Antares	E.	27 34 1	3077	26 5 23	3075	24 36 43	3074	23 8 2	3073
	α Aquilæ	E.	80 30 38	3917	79 17 35	3922	78 4 38	3928	76 51 47	3934

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.		Subtracted from Apparent Time.	
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Mon.	1	8 48 18.47	9.691	N.17 51 3.5	−38.29	15 48.08	66.59	6 4.19	0.165
Tues.	2	8 52 10.74	9.665	17 35 35.8	39.01	15 48.22	66.50	5 59.91	0.191
Wed.	3	8 56 2.38	9.639	17 19 50.9	39.72	15 48.36	66.41	5 55.01	0.217
Thur.	4	8 59 53.40	9.614	17 3 49.2	−40.42	15 48.50	66.32	5 49.50	0.242
Frid.	5	9 3 43.81	9.589	16 47 31.0	41.09	15 48.64	66.23	5 43.38	0.267
Sat.	6	9 7 33.62	9.564	16 30 56.6	41.76	15 48.79	66.15	5 36.65	0.292
SUN.	7	9 11 22.83	9.538	16 14 6.3	−42.41	15 48.94	66.06	5 29.32	0.317
Mon.	8	9 15 11.45	9.514	15 57 0.4	43.06	15 49.10	65.98	5 21.40	0.341
Tues.	9	9 18 59.49	9.490	15 39 39.2	43 70	15 49.26	65.89	5 12.91	0.365
Wed.	10	9 22 46.96	9.467	15 22 3.0	−44.32	15 49.42	65.81	5 3.85	0.388
Thur.	11	9 26 33.87	9.444	15 4 12.0	44.93	15 49.58	65.73	4 54.24	0.411
Frid.	12	9 30 20.24	9.421	14 46 6.5	45.53	15 49.75	65.65	4 44.08	0.434
Sat.	13	9 34 6.07	9.399	14 27 46.8	−46.12	15 49.92	65.57	4 33.38	0.456
SUN.	14	9 37 51.38	9.377	14 9 13.2	46.69	15 50.09	65.49	4 22.16	0.478
Mon.	15	9 41 36.17	9.356	13 50 26.0	47.24	15 50.26	65.41	4 10.43	0.499
Tues.	16	9 45 20.46	9.335	13 31 25.6	−47.79	15 50.44	65.34	3 58.20	0.520
Wed.	17	9 49 4.25	9.315	13 12 12.1	48.32	15 50.62	65.26	3 45.47	0.540
Thur.	18	9 52 47.55	9.295	12 52 45.9	48.84	15 50.80	65.19	3 32.25	0.560
Frid.	19	9 56 30.38	9.275	12 33 7.3	−49.35	15 50.99	65.12	3 18.56	0.580
Sat.	20	10 0 12.74	9.256	12 13 16.7	49.84	15 51.18	65.05	3 4.40	0.599
SUN.	21	10 3 54.64	9.237	11 53 14.5	50.32	15 51.38	64.98	2 49.78	0.618
Mon.	22	10 7 36.09	9.219	11 33 0.9	−50.80	15 51.58	64.92	2 34.71	0.636
Tues.	23	10 11 17.10	9.200	11 12 36.2	51.25	15 51.79	64.85	2 19.21	0.654
Wed.	24	10 14 57.68	9.182	10 52 0.8	51.68	15 52.00	64.79	2 3.29	0.672
Thur.	25	10 18 37.85	9.165	10 31 15.1	−52.10	15 52.21	64.73	1 46.94	0.689
Frid.	26	10 22 17.61	9.148	10 10 19.4	52.51	15 52.43	64.68	1 30.19	0.706
Sat.	27	10 25 56.97	9.132	9 49 14.1	52.91	15 52.65	64.62	1 13.04	0.722
SUN.	28	10 29 35.94	9.116	9 27 59.5	−53.30	15 52.88	64.57	0 55.51	0.738
Mon.	29	10 33 14.55	9.101	9 6 35.9	53.67	15 53.11	64.52	0 37.62	0.753
Tues.	30	10 36 52.81	9.087	8 45 3.7	54.02	15 53.34	64.47	0 19.38	0.767
Wed.	31	10 40 30.73	9.074	8 23 23.2	54.36	15 53.57	64.42	0 0.79	0.780
Thur.	32	10 44 8.33	9.061	N. 8 1 34.7	−54.68	15 53.81	64.38	$\overline{0\ 18.11}$	0.793

Note.—The mean time of semidiameter passing may be found by subtracting 0s.18 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	Equation of Time, to be Subtracted from / Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	8 48 17.48	9.691	N. 17 51 7.3	−38.29	6 4.20	0.165	8 42 13.28
Tues.	2	8 52 9.76	9.665	17 35 39.6	39.01	5 59.92	0.191	8 46 9.83
Wed.	3	8 56 1.42	9.639	17 19 54.7	39.72	5 55.03	0.217	8 50 6.39
Thur.	4	8 59 52.46	9.614	17 3 53.0	−40.42	5 49.52	0.242	8 54 2.94
Frid.	5	9 3 42.89	9.589	16 47 34.9	41.09	5 43.40	0.267	8 57 59.50
Sat.	6	9 7 32.72	9.564	16 31 0.5	41.76	5 36.67	0.292	9 1 56.05
SUN.	7	9 11 21.95	9.539	16 14 10.2	−42.41	5 29.34	0.317	9 5 52.61
Mon.	8	9 15 10.59	9.515	15 57 4.3	43.06	5 21.43	0.341	9 9 49.16
Tues.	9	9 18 58 66	9.491	15 39 43.1	43.70	5 12.94	0.365	9 13 45.72
Wed.	10	9 22 46.16	9.468	15 22 6.8	−44.32	5 3 88	0.388	9 17 42.28
Thur.	11	9 26 33.10	9.445	15 4 15.7	44.93	4 54.27	0.411	9 21 38.84
Frid.	12	9 30 19.50	9.422	14 46 10.1	45.53	4 44.11	0.434	9 25 35.39
Sat.	13	9 34 5.36	9.400	14 27 50.3	−46.12	4 33.41	0.456	9 29 31.95
SUN.	14	9 37 50.70	9.378	14 9 16.6	46.69	4 22.19	0.478	9 33 28.50
Mon.	15	9 41 35.52	9.357	13 50 29.3	47.24	4 10.46	0.499	9 37 25.06
Tues.	16	9 45 19.84	9.336	13 31 28.7	−47.79	3 58.23	0.520	9 41 21.61
Wed.	17	9 49 3.66	9.316	13 12 15.1	48.33	3 45.50	0.540	9 45 18.17
Thur.	18	9 52 47.00	9.296	12 52 48.8	48.85	3 32.28	0.560	9 49 14.72
Frid.	19	9 56 29.86	9.276	12 33 10.1	−49.36	3 18.59	0.580	9 53 11.28
Sat.	20	10 0 12.26	9.257	12 13 19.3	49.85	3 4.43	0.599	9 57 7.83
SUN.	21	10 3 54.20	9.238	11 53 16.9	50.33	2 49.81	0.618	10 1 4.39
Mon.	22	10 7 35.69	9.220	11 33 3.1	−50.81	2 34.74	0.636	10 5 0.94
Tues.	23	10 11 16.74	9.202	11 12 38.2	51.26	2 19.24	0.654	10 8 57.50
Wed.	24	10 14 57.36	9.184	10 52 2.6	51.69	2 3.31	0.672	10 12 54.05
Thur.	25	10 18 37.57	9.167	10 31 16.7	−52.11	1 46.96	0.689	10 16 50.61
Frid.	26	10 22 17.37	9.150	10 10 20.8	52.52	1 30.21	0.706	10 20 47.16
Sat.	27	10 25 56 78	9.134	9 49 15.2	52.92	1 13.06	0.722	10 24 43.72
SUN.	28	10 29 35.80	9.118	9 28 0.3	−53.31	0 55.53	0.738	10 28 40.27
Mon.	29	10 33 14.45	9.103	9 6 36.4	53.68	0 37.63	0.753	10 32 36.83
Tues.	30	10 36 52.76	9.089	8 45 3.9	54.03	0 19.38	0.767	10 36 33.38
Wed.	31	10 40 30.73	9.076	8 23 23.1	54.37	0 0.79	0.780	10 40 29.94
Thur.	32	10 44 8.38	9.063	N. 8 1 34.3	−54.69	0 18.11	0.793	10 44 26.49

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 hour, +9s.8565. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	214	129 38 3.9	37 44.8	143.58	+ 0.09	0.0063297	−25.8	15 15 16.37
2	215	130 35 29.9	35 10.7	143.60	− 0.04	0.0062669	26.5	15 11 20.46
3	216	131 32 56.7	32 37.4	143 63	0.16	0.0062026	27.1	15 7 24.55
4	217	132 30 24.3	30 4.8	143.66	− 0.26	0.0061369	−27.7	15 3 28.64
5	218	133 27 52 6	27 32.9	143.69	0.33	0.0060698	28.2	14 59 32.73
6	219	134 25 21.8	25 1.9	143.73	0.38	0.0060014	28.7	14 55 36 82
7	220	135 22 52.0	22 32.0	143.78	− 0.41	0.0059319	−29.2	14 51 40.91
8	221	136 20 23 3	20 3.2	143.83	0.40	0.0058613	29.7	14 47 45.00
9	222	137 17 55.7	17 35.4	143.88	0.36	0.0057896	30.2	14 43 49.09
10	223	138 15 29.3	15 8.8	143.93	− 0.29	0.0057167	−30.6	14 39 53.18
11	224	139 13 4.2	12 43.6	143.98	0.20	0.0056426	31.1	14 35 57.27
12	225	140 10 40.6	10 19.9	144.04	− 0.09	0.0055673	31.6	14 32 1.36
13	226	141 8 18.5	7 57.7	144.10	+ 0.03	0.0054908	−32.1	14 28 5.45
14	227	142 5 57.9	5 36.9	144.17	0.16	0.0054130	32.7	14 24 9.54
15	228	143 3 38.8	3 17.6	144.24	0.29	0.0053338	33.3	14 20 13.63
16	229	144 1 21.3	1 0.0	144.31	+ 0.42	0.0052531	−34.0	14 16 17.72
17	230	144 59 5.4	58 44.0	144.37	0.54	0.0051707	34.7	14 12 21.81
18	231	145 56 51.2	56 29.7	144.44	0.63	0.0050864	35.5	14 8 25.90
19	232	146 54 38.6	54 16.9	144.51	+ 0.69	0.0050002	−36.3	14 4 30.00
20	233	147 52 27.6	52 5.8	144.58	0.73	0.0049122	37.1	14 0 34.08
21	234	148 50 18.3	49 56.3	144.64	0.75	0.0048224	37.9	13 56 38.17
22	235	149 48 10.5	47 48.4	144.71	+ 0.73	0.0047305	−38.8	13 52 42.26
23	236	150 46 4.2	45 42.0	144.77	0.68	0.0046364	39.6	13 48 46.36
24	237	151 43 59.4	43 37.0	144.83	0.60	0.0045403	40.4	13 44 50.45
25	238	152 41 56.0	41 33.5	144.89	+ 0.50	0.0044423	−41.2	13 40 54.54
26	239	153 39 54.0	39 31.4	144.94	0.38	0.0043426	41.9	13 36 58.63
27	240	154 37 53.4	37 30.6	145.00	0.26	0.0042411	42.6	13 33 2.72
28	241	155 35 54.2	35 31.3	145.06	+ 0.13	0.0041380	−43.3	13 29 6.81
29	242	156 33 56.3	33 33.3	145.12	0.00	0.0040334	43.9	13 25 10.90
30	243	157 31 59.8	31 36.7	145.18	− 0.12	0.0039275	44.4	13 21 14.99
31	244	158 30 4.8	29 41.6	145.24	0.23	0.0038204	44.8	13 17 19.09
32	245	159 28 11.2	27 47.9	145.29	− 0.32	0.0037124	−45.2	13 13 23.18

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′, to the mean equinox of January $1^d.0$.

Diff. for 1 Hour,
— $9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 50.9	14 53.0	54 23.0	+0.52	54 30.5	+0.73	6 26.9	1.86	8.5
2	14 55.7	14 59.0	54 40.5	0.93	54 52.8	1.12	7 13.0	1.99	9.5
3	15 3.0	15 7.5	55 7.3	1.29	55 23.7	1.44	8 2.7	2.15	10.5
4	15 12.4	15 17.7	55 41.8	+1.57	56 1.3	+1.67	8 55.9	2.28	11.5
5	15 23.3	15 29.1	56 21.9	1.75	56 43.1	1.79	9 51.7	2.36	12.5
6	15 35.0	15 40.8	57 4.7	1.80	57 26.1	1.77	10 48.6	2.37	13.5
7	15 46.5	15 51.9	57 47.1	+1.71	58 7.0	+1.61	11 44.9	2.30	14.5
8	15 57.0	16 1.6	58 25.7	1.49	58 42.7	1.34	12 39.1	2.21	15.5
9	16 5.7	16 9.2	58 57.7	1.16	59 10.5	0.97	13 31.1	2.12	16.5
10	16 12.0	16 14.2	59 20.9	+0.78	59 29.0	+0.57	14 21.0	2.05	17.5
11	16 15.7	16 16.6	59 34.5	+0.36	59 37.6	+0.17	15 9.9	2.03	18.5
12	16 16.8	16 16.5	59 38.4	−0.03	59 37.1	−0.20	15 58.9	2.06	19.5
13	16 15.6	16 14.2	59 33.8	−0.35	59 28.8	−0.48	16 49.3	2.15	20.5
14	16 12.4	16 10.3	59 22.4	0.60	59 14.5	0.70	17 42.1	2.26	21.5
15	16 7.9	16 5.2	59 5.6	0.79	58 55.7	0.86	18 37.9	2.38	22.5
16	16 2.3	15 59.2	58 45.0	−0.92	58 33.6	−0.99	19 36.4	2.47	23.5
17	15 55.9	15 52.4	58 21.5	1.04	58 8.8	1.08	20 36.2	2.49	24.5
18	15 48.8	15 45.1	57 55.6	1.13	57 41.9	1.16	21 35.1	2.41	25.5
19	15 41.2	15 37.3	57 27.8	−1.20	57 13.2	−1.23	22 31.3	2.27	26.5
20	15 33.2	15 29.1	56 58.3	1.26	56 43.1	1.28	23 23.6	2.10	27.5
21	15 24.9	15 20.7	56 27.7	1.29	56 12.3	1.29	δ		28.5
22	15 16.5	15 12.4	55 57.0	−1.27	55 41.9	−1.24	0 11.8	1.93	0.0
23	15 8.4	15 4.6	55 27.3	1.20	55 13.3	1.13	0 56.4	1.80	1.0
24	15 1.1	14 57.8	55 0.2	1.05	54 48.2	0.95	1 38.4	1.71	2.0
25	14 54.9	14 52.3	54 37.4	−0.84	54 28.1	−0.71	2 18.8	1.67	3.0
26	14 50.3	14 48.7	54 20.5	0.56	54 14.8	0.39	2 58.7	1.67	4.0
27	14 47.7	14 47.3	54 11.2	−0.21	54 9.8	−0.03	3 39.2	1.72	5.0
28	14 47.6	14 48.5	54 10.7	+0.18	54 14.0	+0.39	4 21.3	1.80	6.0
29	14 50.1	14 52.4	54 19.9	0.60	54 28.3	0.81	5 5.8	1.91	7.0
30	14 55.3	14 59.0	54 39.2	1.02	54 52.7	1.23	5 53.4	2.05	8.0
31	15 3.3	15 8.3	55 8.6	1.42	55 26.8	1.61	6 44.4	2.19	9.0
32	15 13.8	15 19.9	55 47.1	+1.78	56 9.3	+1.91	7 38.3	2.29	10.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 57 39.11	1.9322	S. 17 16 26.5	10.933
1	14 59 35.18	1.9367	17 27 20.5	10.868
2	15 1 31.52	1.9413	17 38 10.6	10.802
3	15 3 28.14	1.9460	17 48 56.7	10.734
4	15 5 25.04	1.9507	17 59 38.7	10.665
5	15 7 22.22	1.9554	18 10 16.5	10.595
6	15 9 19.68	1.9601	18 20 50.1	10.525
7	15 11 17.43	1.9649	18 31 19.5	10.454
8	15 13 15.47	1.9698	18 41 44.6	10.382
9	15 15 13.81	1.9747	18 52 5.3	10.308
10	15 17 12.44	1.9797	19 2 21.6	10.234
11	15 19 11.37	1.9847	19 12 33.4	10.159
12	15 21 10.60	1.9897	19 22 40.7	10.083
13	15 23 10.14	1.9948	19 32 43.4	10.007
14	15 25 9.98	1.9999	19 42 41.5	9.929
15	15 27 10.13	2.0051	19 52 34.9	9.850
16	15 29 10.60	2.0104	20 2 23.5	9.771
17	15 31 11.38	2.0156	20 12 7.4	9.691
18	15 33 12.47	2.0208	20 21 46.4	9.609
19	15 35 13.88	2.0262	20 31 20.5	9.527
20	15 37 15.61	2.0316	20 40 49.6	9.443
21	15 39 17.67	2.0370	20 50 13.6	9.358
22	15 41 20.05	2.0424	20 59 32.5	9.273
23	15 43 22.76	2.0479	S. 21 8 46.3	9.187

TUESDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 45 25.80	2.0534	S. 21 17 54.9	9.099
1	15 47 29.17	2.0589	21 26 58.2	9.011
2	15 49 32.87	2.0644	21 35 56.2	8.922
3	15 51 36.90	2.0700	21 44 48.8	8.831
4	15 53 41.27	2.0756	21 53 35.9	8.739
5	15 55 45.98	2.0812	22 2 17.5	8.647
6	15 57 51.02	2.0868	22 10 53.6	8.554
7	15 59 56.40	2.0925	22 19 24.0	8.459
8	16 2 2.12	2.0982	22 27 48.7	8.363
9	16 4 8.19	2.1040	22 36 7.6	8.267
10	16 6 14.60	2.1097	22 44 20.7	8.169
11	16 8 21.35	2.1154	22 52 27.9	8.071
12	16 10 28.45	2.1212	23 0 29.2	7.972
13	16 12 35.89	2.1269	23 8 24.5	7.871
14	16 14 43.68	2.1327	23 16 13.7	7.768
15	16 16 51.81	2.1384	23 23 56.7	7.665
16	16 19 0.29	2.1442	23 31 33.5	7.562
17	16 21 9.12	2.1500	23 39 4.1	7.457
18	16 23 18.29	2.1558	23 46 28.3	7.350
19	16 25 27.81	2.1616	23 53 46.1	7.243
20	16 27 37.68	2.1674	24 0 57.5	7.136
21	16 29 47.90	2.1732	24 8 2.4	7.027
22	16 31 58.46	2.1789	24 15 0.7	6.916
23	16 34 9.37	2.1847	24 21 52.3	6.804
24	16 36 20.62	2.1904	S. 24 28 37.2	6.692

WEDNESDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination	Diff. for 1 Minute
	h m s	s	° ′ ″	″
0	16 36 20.62	2.1904	S. 24 28 37.2	6.692
1	16 38 32.22	2.1962	24 35 15.4	6.579
2	16 40 44.16	2.2019	24 41 46.7	6.464
3	16 42 56.45	2.2076	24 48 11.1	6.348
4	16 45 9.08	2.2132	24 54 28.5	6.232
5	16 47 22.04	2.2189	25 0 38.9	6.114
6	16 49 35.35	2.2246	25 6 42.2	5.995
7	16 51 49.00	2.2302	25 12 38.3	5.875
8	16 54 2.98	2.2358	25 18 27.2	5.755
9	16 56 17.30	2.2414	25 24 8.9	5.633
10	16 58 31.95	2.2469	25 29 43.2	5.510
11	17 0 46.93	2.2525	25 35 10.1	5.386
12	17 3 2.25	2.2580	25 40 29.5	5.260
13	17 5 17.89	2.2634	25 45 41.3	5.134
14	17 7 33.86	2.2688	25 50 45.6	5.007
15	17 9 50.15	2.2741	25 55 42.2	4.879
16	17 12 6.76	2.2794	26 0 31.1	4.750
17	17 14 23.68	2.2847	26 5 12.2	4.620
18	17 16 40.92	2.2899	26 9 45.5	4.489
19	17 18 58.47	2.2951	26 14 10.9	4.357
20	17 21 16.33	2.3002	26 18 28.3	4.223
21	17 23 34.50	2.3053	26 22 37.7	4.089
22	17 25 52.97	2.3103	26 26 39.0	3.954
23	17 28 11.73	2.3152	S. 26 30 32.2	3.818

THURSDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination	Diff. for 1 Minute
0	17 30 30.79	2.3201	S. 26 34 17.2	3.681
1	17 32 50.14	2.3249	26 37 53.9	3.543
2	17 35 9.78	2.3297	26 41 22.4	3.405
3	17 37 29.70	2.3343	26 44 42.5	3.264
4	17 39 49.90	2.3390	26 47 54.1	3.123
5	17 42 10.38	2.3436	26 50 57.3	2.982
6	17 44 31.13	2.3480	26 53 52.0	2.840
7	17 46 52.14	2.3524	26 56 38.1	2.697
8	17 49 13.42	2.3567	26 59 15.6	2.552
9	17 51 34.95	2.3609	27 1 44.4	2.407
10	17 53 56.73	2.3651	27 4 4.4	2.261
11	17 56 18.76	2.3692	27 6 15.7	2.115
12	17 58 41.04	2.3732	27 8 18.2	1.967
13	18 1 3.55	2.3771	27 10 11.8	1.819
14	18 3 26.29	2.3808	27 11 56.5	1.670
15	18 5 49.25	2.3845	27 13 32.2	1.520
16	18 8 12.43	2.3882	27 14 58.9	1.370
17	18 10 35.83	2.3918	27 16 16.6	1.219
18	18 12 59.45	2.3953	27 17 25.2	1.067
19	18 15 23.27	2.3966	27 18 24.6	0.914
20	18 17 47.28	2.4018	27 19 14.9	0.761
21	18 20 11.48	2.4049	27 19 56.0	0.607
22	18 22 35.87	2.4080	27 20 27.8	0.453
23	18 25 0.44	2.4109	27 20 50.4	0.299
24	18 27 25.18	2.4137	S. 27 21 3.7	– 0.143

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	18 27 25.18	2.4137	S.27 21 3.7	− 0.143
1	18 29 50.09	2.4165	27 21 7.6	+ 0.013
2	18 32 15.16	2.4191	27 21 2.1	0.170
3	18 34 40.38	2.4216	27 20 47.2	0.327
4	18 37 5.75	2.4240	27 20 22.8	0.485
5	18 39 31.26	2.4263	27 19 49.0	0.643
6	18 41 56.91	2.4286	27 19 5.7	0.801
7	18 44 22.69	2.4306	27 18 12.9	0.960
8	18 46 48.58	2.4324	27 17 10.5	1.119
9	18 49 14.58	2.4343	27 15 58.6	1.278
10	18 51 40.69	2.4361	27 14 37.1	1.438
11	18 54 6.91	2.4377	27 13 6.0	1.599
12	18 56 33.22	2.4392	27 11 25.2	1.760
13	18 58 59.61	2.4406	27 9 34.8	1.920
14	19 1 26.09	2.4419	27 7 34.8	2.081
15	19 3 52.64	2.4430	27 5 25.1	2.242
16	19 6 19.25	2.4440	27 3 5.7	2.403
17	19 8 45.92	2.4450	27 0 36.7	2.564
18	19 11 12.65	2.4458	26 57 58.0	2.726
19	19 13 39.42	2.4465	26 55 9.6	2.888
20	19 16 6.23	2.4471	26 52 11.4	3.051
21	19 18 33.07	2.4476	26 49 3.5	3.212
22	19 20 59.94	2.4479	26 45 45.9	3.374
23	19 23 26.82	2.4481	S.26 42 18.6	3.535

SATURDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	19 25 53.71	2.4482	S.26 38 41.7	3.697
1	19 28 20.61	2.4483	26 34 55.0	3.859
2	19 30 47.51	2.4482	26 30 58.6	4.021
3	19 33 14.39	2.4479	26 26 52.5	4.182
4	19 35 41.25	2.4476	26 22 36.7	4.343
5	19 38 8.10	2.4472	26 18 11.3	4.504
6	19 40 34.92	2.4467	26 13 36.2	4.665
7	19 43 1.70	2.4460	26 8 51.5	4.826
8	19 45 28.44	2.4452	26 3 57.1	4.987
9	19 47 55.13	2.4443	25 58 53.1	5.147
10	19 50 21.76	2.4433	25 53 39.5	5.307
11	19 52 48.33	2.4423	25 48 16.3	5.467
12	19 55 14.84	2.4412	25 42 43.5	5.626
13	19 57 41.27	2.4399	25 37 1.2	5.784
14	20 0 7.62	2.4386	25 31 9.4	5.942
15	20 2 33.89	2.4371	25 25 8.1	6.100
16	20 5 0.07	2.4355	25 18 57.4	6.257
17	20 7 26.15	2.4337	25 12 37.3	6.414
18	20 9 52.12	2.4319	25 6 7.7	6.571
19	20 12 17.98	2.4301	24 59 28.7	6.727
20	20 14 43.73	2.4282	24 52 40.5	6.881
21	20 17 9.37	2.4262	24 45 43.0	7.036
22	20 19 34.88	2.4241	24 38 36.2	7.190
23	20 22 0.26	2.4218	24 31 20.2	7.343
24	20 24 25.50	2.4195	S.24 23 55.1	7.495

SUNDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 24 25.50	2.4195	S.24 23 55.1	7.495
1	20 26 50.60	2.4172	24 16 20.8	7.647
2	20 29 15.56	2.4147	24 8 37.4	7.798
3	20 31 40.37	2.4122	24 0 45.0	7.948
4	20 34 5.02	2.4096	23 52 43.6	8.098
5	20 36 29.52	2.4070	23 44 33.2	8.247
6	20 38 53.86	2.4042	23 36 13.9	8.395
7	20 41 18.03	2.4014	23 27 45.8	8.542
8	20 43 42.03	2.3986	23 19 8.9	8.688
9	20 46 5.86	2.3957	23 10 23.2	8.834
10	20 48 29.51	2.3926	23 1 28.8	8.978
11	20 50 52.97	2.3895	22 52 25.8	9.121
12	20 53 16.25	2.3864	22 43 14.3	9.263
13	20 55 39.34	2.3833	22 33 54.3	9.404
14	20 58 2.24	2.3801	22 24 25.8	9.546
15	21 0 24.95	2.3768	22 14 48.8	9.686
16	21 2 47.46	2.3734	22 5 3.5	9.823
17	21 5 9.76	2.3700	21 55 10.0	9.960
18	21 7 31.86	2.3666	21 45 8.3	10.097
19	21 9 53.75	2.3632	21 34 58.4	10.233
20	21 12 15.44	2.3597	21 24 40.4	10.367
21	21 14 36.92	2.3562	21 14 14.4	10.499
22	21 16 58.18	2.3526	21 3 40.5	10.630
23	21 19 19.23	2.3491	S.20 52 58.8	10.760

MONDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 21 40.07	2.3455	S.20 42 9.3	10.890
1	21 24 0.69	2.3418	20 31 12.0	11.018
2	21 26 21.09	2.3381	20 20 7.1	11.145
3	21 28 41.26	2.3344	20 8 54.6	11.272
4	21 31 1.21	2.3307	19 57 34.5	11.396
5	21 33 20.94	2.3270	19 46 7.1	11.518
6	21 35 40.45	2.3232	19 34 32.4	11.639
7	21 37 59.73	2.3195	19 22 50.4	11.761
8	21 40 18.79	2.3157	19 11 1.1	11.881
9	21 42 37.62	2.3119	18 59 4.7	11.998
10	21 44 56.22	2.3081	18 47 1.3	12.115
11	21 47 14.59	2.3044	18 34 50.9	12.230
12	21 49 32.74	2.3006	18 22 33.7	12.344
13	21 51 50.66	2.2968	18 10 9.7	12.457
14	21 54 8.35	2.2930	17 57 38.9	12.568
15	21 56 25.82	2.2892	17 45 1.5	12.677
16	21 58 43.06	2.2854	17 32 17.6	12.786
17	22 1 0.07	2.2817	17 19 27.2	12.892
18	22 3 16.86	2.2779	17 6 30.5	12.997
19	22 5 33.42	2.2742	16 53 27.5	13.102
20	22 7 49.76	2.2705	16 40 18.3	13.205
21	22 10 5.88	2.2668	16 27 2.9	13.307
22	22 12 21.78	2.2631	16 13 41.5	13.406
23	22 14 37.45	2.2594	16 0 14.2	13.504
24	22 16 52.90	2.2557	S.15 46 41.0	13.601

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 9.					**THURSDAY 11.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	22 16 52.90	2.2557	S. 15 46 41.0	13.601	0	0 1 43.73	2.1347	S. 3 31 35.7	16.422
1	22 19 8.13	2.2521	15 33 2.1	13.696	1	0 3 51.78	2.1337	3 15 9.7	16.442
2	22 21 23.15	2.2485	15 19 17.5	13.790	2	0 5 59.77	2.1327	2 58 42.6	16.461
3	22 23 37.95	2.2449	15 5 27.3	13.882	3	0 8 7.71	2.1319	2 42 14.4	16.478
4	22 25 52.54	2.2413	14 51 31.6	13.973	4	0 10 15.60	2.1313	2 25 45.2	16.493
5	22 28 6.91	2.2378	14 37 30.5	14.062	5	0 12 23.46	2.1307	2 9 15.2	16.507
6	22 30 21.07	2.2343	14 23 24.1	14.150	6	0 14 31.28	2.1301	1 52 44.4	16.519
7	22 32 35.03	2.2309	14 9 12.5	14.237	7	0 16 39.07	2.1296	1 36 12.9	16.529
8	22 34 48.78	2.2274	13 54 55.7	14.322	8	0 18 46.83	2.1292	1 19 40.9	16.537
9	22 37 2.32	2.2240	13 40 33.9	14.404	9	0 20 54.57	2.1288	1 3 8.4	16.545
10	22 39 15.66	2.2207	13 26 7.2	14.486	10	0 23 2.29	2.1286	0 46 35.5	16.551
11	22 41 28.81	2.2175	13 11 35.6	14.566	11	0 25 10.00	2.1285	0 30 2.3	16.556
12	22 43 41.76	2.2142	12 56 59.3	14.644	12	0 27 17.71	2.1284	S. 0 13 28.8	16.558
13	22 45 54.52	2.2110	12 42 18.3	14.722	13	0 29 25.41	2.1283	N. 0 3 4.7	16.558
14	22 48 7.08	2.2078	12 27 32.7	14.798	14	0 31 33.11	2.1284	0 19 38.2	16.558
15	22 50 19.45	2.2047	12 12 42.6	14.872	15	0 33 40.82	2.1286	0 36 11.7	16.557
16	22 52 31.64	2.2016	11 57 48.1	14.943	16	0 35 48.54	2.1288	0 52 45.0	16.553
17	22 54 43.64	2.1985	11 42 49.4	15.013	17	0 37 56.28	2.1291	1 9 18.0	16.547
18	22 56 55.46	2.1956	11 27 46.5	15.082	18	0 40 4.04	2.1295	1 25 50.6	16.539
19	22 59 7.11	2.1927	11 12 39.5	15.151	19	0 42 11.82	2.1300	1 42 22.7	16.531
20	23 1 18.58	2.1898	10 57 28.4	15.218	20	0 44 19.64	2.1306	1 58 54.3	16.522
21	23 3 29.88	2.1870	10 42 13.4	15.282	21	0 46 27.49	2.1312	2 15 25.3	16.510
22	23 5 41.02	2.1842	10 26 54.6	15.344	22	0 48 35.38	2.1319	2 31 55.5	16.497
23	23 7 51.99	2.1815	S. 10 11 32.1	15.406	23	0 50 43.32	2.1327	N. 2 48 24.9	16.482
	WEDNESDAY 10.					**FRIDAY 12.**			
0	23 10 2.80	2.1788	S. 9 56 5.9	15.466	0	0 52 51.31	2.1336	N. 3 4 53.4	16.466
1	23 12 13.45	2.1762	9 40 36.2	15.524	1	0 54 59.35	2.1346	3 21 20.8	16.448
2	23 14 23.95	2.1737	9 25 3.0	15.581	2	0 57 7.46	2.1357	3 37 47.1	16.428
3	23 16 34.30	2.1712	9 9 26.5	15.635	3	0 59 15.63	2.1368	3 54 12.2	16.407
4	23 18 44.50	2.1688	8 53 46.8	15.688	4	1 1 23.87	2.1379	4 10 36.0	16.385
5	23 20 54.56	2.1664	8 38 3.9	15.741	5	1 3 32.18	2.1392	4 26 58.4	16.361
6	23 23 4.47	2.1641	8 22 17.9	15.791	6	1 5 40.57	2.1405	4 43 19.3	16.335
7	23 25 14.25	2.1618	8 6 29.0	15.839	7	1 7 49.04	2.1420	4 59 38.6	16.307
8	23 27 23.90	2.1597	7 50 37.2	15.887	8	1 9 57.61	2.1436	5 15 56.2	16.279
9	23 29 33.42	2.1577	7 34 42.6	15.933	9	1 12 6.27	2.1452	5 32 12.1	16.249
10	23 31 42.82	2.1557	7 18 45.3	15.977	10	1 14 15.03	2.1468	5 48 26.1	16.217
11	23 33 52.10	2.1537	7 2 45.4	16.018	11	1 16 23.89	2.1485	6 4 38.1	16.183
12	23 36 1.26	2.1517	6 46 43.1	16.058	12	1 18 32.85	2.1503	6 20 48.1	16.148
13	23 38 10.31	2.1499	6 30 38.4	16.098	13	1 20 41.93	2.1523	6 36 55.9	16.112
14	23 40 19.25	2.1482	6 14 31.3	16.136	14	1 22 51.13	2.1543	6 53 1.5	16.074
15	23 42 28.09	2.1465	5 58 22.1	16.171	15	1 25 0.45	2.1563	7 9 4.8	16.034
16	23 44 36.83	2.1449	5 42 10.8	16.206	16	1 27 9.89	2.1585	7 25 5.6	15.992
17	23 46 45.48	2.1434	5 25 57.4	16.239	17	1 29 19.47	2.1607	7 41 3.9	15.950
18	23 48 54.04	2.1419	5 9 42.1	16.270	18	1 31 29.18	2.1630	7 56 59.6	15.906
19	23 51 2.51	2.1405	4 53 25.0	16.299	19	1 33 39.03	2.1654	8 12 52.6	15.860
20	23 53 10.90	2.1392	4 37 6.2	16.327	20	1 35 49.03	2.1679	8 28 42.8	15.812
21	23 55 19.21	2.1379	4 20 45.8	16.353	21	1 37 59.18	2.1704	8 44 30.1	15.763
22	23 57 27.45	2.1367	4 4 23.8	16.378	22	1 40 9.48	2.1730	9 0 14.4	15.712
23	23 59 35.62	2.1357	3 48 0.4	16.401	23	1 42 19.94	2.1757	9 15 55.6	15.661
24	0 1 43.73	2.1347	S. 3 31 35.7	16.422	24	1 44 30.56	2.1784	N. 9 31 33.7	15.607

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 44 30.56	2.1784	N. 9 31 33.7	15.607
1	1 46 41.35	2.1812	9 47 8.5	15.552
2	1 48 52.31	2.1841	10 2 39.9	15.495
3	1 51 3.44	2.1870	10 18 7.9	15.437
4	1 53 14.75	2.1901	10 33 32.4	15.377
5	1 55 26.25	2.1932	10 48 53.2	15.316
6	1 57 37.94	2.1964	11 4 10.3	15.253
7	1 59 49.82	2.1996	11 19 23.6	15.189
8	2 2 1.89	2.2028	11 34 33.0	15.122
9	2 4 14.16	2.2062	11 49 38.3	15.054
10	2 6 26.64	2.2096	12 4 39.5	14.986
11	2 8 39.32	2.2131	12 19 36.6	14.917
12	2 10 52.21	2.2167	12 34 29.5	14.845
13	2 13 5.32	2.2203	12 49 18.0	14.771
14	2 15 18.65	2.2239	13 4 2.0	14.695
15	2 17 32.19	2.2276	13 18 41.4	14.618
16	2 19 45.96	2.2315	13 33 16.2	14.541
17	2 21 59.97	2.2354	13 47 46.3	14.461
18	2 24 14.21	2.2393	14 2 11.5	14.379
19	2 26 28.68	2.2432	14 16 31.8	14.297
20	2 28 43.39	2.2472	14 30 47.1	14.213
21	2 30 58.34	2.2513	14 44 57.3	14.127
22	2 33 13.54	2.2554	14 59 2.3	14.039
23	2 35 28.99	2.2595	N.15 13 2.0	13.951

SUNDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 37 44.68	2.2637	N.15 26 56.4	13.861
1	2 40 0.63	2.2680	15 40 45.3	13.769
2	2 42 16.84	2.2723	15 54 28.7	13.676
3	2 44 33.30	2.2766	16 8 6.4	13.581
4	2 46 50.03	2.2810	16 21 38.4	13.484
5	2 49 7.02	2.2853	16 35 4.5	13.386
6	2 51 24.27	2.2897	16 48 24.7	13.287
7	2 53 41.79	2.2942	17 1 38.9	13.186
8	2 55 59.58	2.2988	17 14 47.0	13.084
9	2 58 17.65	2.3034	17 27 49.0	12.981
10	3 0 35.99	2.3080	17 40 44.7	12.876
11	3 2 54.61	2.3126	17 53 34.1	12.769
12	3 5 13.50	2.3172	18 6 17.0	12.661
13	3 7 32.67	2.3219	18 18 53.4	12.552
14	3 9 52.12	2.3266	18 31 23.2	12.440
15	3 12 11.86	2.3313	18 43 46.2	12.327
16	3 14 31.88	2.3360	18 56 2.4	12.213
17	3 16 52.18	2.3407	19 8 11.8	12.098
18	3 19 12.76	2.3454	19 20 14.2	11.981
19	3 21 33.63	2.3502	19 32 9.5	11.862
20	3 23 54.78	2.3549	19 43 57.7	11.743
21	3 26 16.22	2.3597	19 55 38.7	11.622
22	3 28 37.95	2.3645	20 7 12.4	11.500
23	3 30 59.96	2.3692	20 18 38.7	11.376
24	3 33 22.26	2.3740	N.20 29 57.5	11.251

MONDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	3 33 22.26	2.3740	N.20 29 57.5	11.251
1	3 35 44.84	2.3788	20 41 8.8	11.124
2	3 38 7.71	2.3836	20 52 12.4	10.996
3	3 40 30.87	2.3883	21 3 8.3	10.867
4	3 42 54.31	2.3931	21 13 56.4	10.736
5	3 45 18.04	2.3978	21 24 36.6	10.604
6	3 47 42.05	2.4025	21 35 8.9	10.471
7	3 50 6.34	2.4072	21 45 33.1	10.336
8	3 52 30.91	2.4119	21 55 49.2	10.200
9	3 54 55.77	2.4166	22 5 57.1	10.062
10	3 57 20.91	2.4212	22 15 56.7	9.924
11	3 59 46.32	2.4257	22 25 48.0	9.785
12	4 2 12.00	2.4303	22 35 30.9	9.644
13	4 4 37.96	2.4349	22 45 5.3	9.502
14	4 7 4.19	2.4393	22 54 31.1	9.358
15	4 9 30.68	2.4437	23 3 48.2	9.213
16	4 11 57.44	2.4482	23 12 56.6	9.067
17	4 14 24.46	2.4526	23 21 56.2	8.920
18	4 16 51.75	2.4570	23 30 47.0	8.772
19	4 19 19.30	2.4612	23 39 28.9	8.623
20	4 21 47.10	2.4653	23 48 1.8	8.472
21	4 24 15.14	2.4694	23 56 25.5	8.319
22	4 26 43.43	2.4736	24 4 40.1	8.167
23	4 29 11.97	2.4777	N.24 12 45.6	8.014

TUESDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	4 31 40.75	2.4816	N.24 20 41.8	7.859
1	4 34 9.76	2.4855	24 28 28.7	7.703
2	4 36 39.01	2.4894	24 36 6.2	7.547
3	4 39 8.49	2.4932	24 43 34.3	7.389
4	4 41 38.19	2.4968	24 50 52.9	7.230
5	4 44 8.10	2.5004	24 58 1.9	7.069
6	4 46 38.23	2.5039	25 5 1.2	6.908
7	4 49 8.57	2.5073	25 11 50.9	6.747
8	4 51 39.11	2.5106	25 18 30.9	6.585
9	4 54 9.84	2.5138	25 25 1.1	6.422
10	4 56 40.77	2.5171	25 31 21.5	6.258
11	4 59 11.89	2.5202	25 37 32.0	6.093
12	5 1 43.19	2.5231	25 43 32.7	5.928
13	5 4 14.66	2.5259	25 49 23.4	5.761
14	5 6 46.30	2.5287	25 55 4.0	5.594
15	5 9 18.11	2.5314	26 0 34.6	5.426
16	5 11 50.07	2.5339	26 5 55.1	5.257
17	5 14 22.18	2.5363	26 11 5.5	5.088
18	5 16 54.43	2.5387	26 16 5.7	4.918
19	5 19 26.82	2.5409	26 20 55.7	4.748
20	5 21 59.34	2.5430	26 25 35.4	4.577
21	5 24 31.98	2.5450	26 30 4.9	4.405
22	5 27 4.74	2.5468	26 34 24.0	4.233
23	5 29 37.60	2.5485	26 38 32.8	4.061
24	5 32 10.56	2.5502	N.26 42 31.3	3.888

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
WEDNESDAY 17.					**FRIDAY 19.**				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	5 32 10.56	2.5502	N.26 42 31.3	3.888	0	7 33 55.00	2.4713	N.26 28 59.8	4.390
1	5 34 43.62	2.5517	26 46 19.4	3.714	1	7 36 23.14	2.4667	26 24 35.9	4.477
2	5 37 16.77	2.5531	26 49 57.0	3.540	2	7 38 51.00	2.4620	26 20 2.5	4.634
3	5 39 49.99	2.5543	26 53 24.2	3.367	3	7 41 18.58	2.4572	26 15 19.8	4.788
4	5 42 23.28	2.5554	26 56 41.0	3.193	4	7 43 45.86	2.4521	26 10 27.9	4.942
5	5 44 56.64	2.5564	26 59 47.3	3.018	5	7 46 12.83	2.4469	26 5 26.8	5.094
6	5 47 30.05	2.5572	27 2 43.1	2.843	6	7 48 39.49	2.4418	26 0 16.6	5.246
7	5 50 3.51	2.5580	27 5 28.4	2.668	7	7 51 5.84	2.4366	25 54 57.3	5.397
8	5 52 37.01	2.5586	27 8 3.2	2.492	8	7 53 31.88	2.4313	25 49 29.0	5.545
9	5 55 10.54	2.5591	27 10 27.4	2.316	9	7 55 57.60	2.4259	25 43 51.9	5.692
10	5 57 44.10	2.5594	27 12 41.1	2.141	10	7 58 22.99	2.4204	25 38 6.0	5.839
11	6 0 17.67	2.5595	27 14 44.3	1.965	11	8 0 48.05	2.4149	25 32 11.2	5.986
12	6 2 51.24	2.5595	27 16 36.9	1.788	12	8 3 12.78	2.4093	25 26 7.7	6.130
13	6 5 24.81	2.5595	27 18 18.9	1.612	13	8 5 37.17	2.4036	25 19 55.6	6.272
14	6 7 58.38	2.5593	27 19 50.4	1.437	14	8 8 1.21	2.3978	25 13 35.0	6.414
15	6 10 31.93	2.5589	27 21 11.4	1.262	15	8 10 24.91	2.3920	25 7 5.9	6.555
16	6 13 5.45	2.5583	27 22 21.8	1.086	16	8 12 48.25	2.3861	25 0 28.4	6.694
17	6 15 38.93	2.5577	27 23 21.7	0.910	17	8 15 11.24	2.3802	24 53 42.6	6.832
18	6 18 12.37	2.5569	27 24 11.0	0.734	18	8 17 33.87	2.3742	24 46 48.5	6.970
19	6 20 45.76	2.5560	27 24 49.8	0.559	19	8 19 56.14	2.3681	24 39 46.2	7.105
20	6 23 19.09	2.5549	27 25 18.1	0.383	20	8 22 18.04	2.3620	24 32 35.9	7.239
21	6 25 52.35	2.5537	27 25 35.8	0.208	21	8 24 39.58	2.3559	24 25 17.6	7.372
22	6 28 25.53	2.5523	27 25 43.1	+ 0.034	22	8 27 0.75	2.3497	24 17 51.3	7.503
23	6 30 58.63	2.5508	N.27 25 39.9	− 0.141	23	8 29 21.54	2.3434	N.24 10 17.2	7.632
THURSDAY 18.					**SATURDAY 20.**				
0	6 33 31.63	2.5492	N.27 25 26.2	0.315	0	8 31 41.96	2.3371	N.24 2 35.4	7.761
1	6 36 4.53	2.5474	27 25 2.1	0.488	1	8 34 2.00	2.3308	23 54 45.9	7.889
2	6 38 37.32	2.5456	27 24 27.6	0.662	2	8 36 21.66	2.3245	23 46 48.7	8.016
3	6 41 10.00	2.5436	27 23 42.7	0.835	3	8 38 40.94	2.3181	23 38 44.0	8.141
4	6 43 42.55	2.5413	27 22 47.4	1.007	4	8 40 59.83	2.3117	23 30 31.8	8.264
5	6 46 14.96	2.5390	27 21 41.8	1.180	5	8 43 18.34	2.3052	23 22 12.3	8.386
6	6 48 47.23	2.5366	27 20 25.8	1.352	6	8 45 36.46	2.2987	23 13 45.5	8.507
7	6 51 19.35	2.5340	27 18 59.5	1.523	7	8 47 54.19	2.2922	23 5 11.5	8.626
8	6 53 51.31	2.5312	27 17 23.0	1.693	8	8 50 11.53	2.2858	22 56 30.4	8.743
9	6 56 23.10	2.5284	27 15 36.4	1.862	9	8 52 28.49	2.2793	22 47 42.3	8.860
10	6 58 54.72	2.5255	27 13 39.6	2.032	10	8 54 45.05	2.2727	22 38 47.2	8.975
11	7 1 26.16	2.5224	27 11 32.6	2.201	11	8 57 1.22	2.2662	22 29 45.3	9.087
12	7 3 57.41	2.5192	27 9 15.5	2.369	12	8 59 16.99	2.2596	22 20 36.7	9.199
13	7 6 28.46	2.5158	27 6 48.3	2.536	13	9 1 32.37	2.2530	22 11 21.4	9.311
14	7 8 59.30	2.5123	27 4 11.2	2.702	14	9 3 47.35	2.2464	22 1 59.4	9.421
15	7 11 29.94	2.5088	27 1 24.1	2.867	15	9 6 1.94	2.2398	21 52 30.9	9.528
16	7 14 0.36	2.5051	26 58 27.1	3.032	16	9 8 16.13	2.2332	21 42 56.0	9.635
17	7 16 30.55	2.5012	26 55 20.2	3.197	17	9 10 29.93	2.2267	21 33 14.7	9.740
18	7 19 0.51	2.4973	26 52 3.5	3.360	18	9 12 43.34	2.2201	21 23 27.2	9.843
19	7 21 30.23	2.4932	26 48 37.0	3.522	19	9 14 56.35	2.2135	21 13 33.5	9.946
20	7 23 59.70	2.4891	26 45 0.8	3.684	20	9 17 8.96	2.2069	21 3 33.7	10.047
21	7 26 28.92	2.4848	26 41 14.9	3.845	21	9 19 21.18	2.2004	20 53 27.9	10.146
22	7 28 57.88	2.4805	26 37 19.4	4.005	22	9 21 33.01	2.1939	20 43 16.2	10.243
23	7 31 26.58	2.4760	26 33 14.3	4.163	23	9 23 44.45	2.1873	20 32 58.7	10.339
24	7 33 55.00	2.4713	N.26 28 59.8	4.320	24	9 25 55.49	2.1807	N.20 22 35.5	10.434

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	9 25 55.49	2.1807	N.20 22 35.5	10.434
1	9 28 6.14	2.1742	20 12 6.6	10.528
2	9 30 16.40	2.1678	20 1 32.1	10.621
3	9 32 26.28	2.1614	19 50 52.1	10.712
4	9 34 35.77	2.1549	19 40 6.7	10.802
5	9 36 44.87	2.1485	19 29 15.9	10.890
6	9 38 53.59	2.1421	19 18 19.9	10.977
7	9 41 1.93	2.1357	19 7 18.7	11.062
8	9 43 9.88	2.1293	18 56 12.5	11.145
9	9 45 17.45	2.1231	18 45 1.3	11.227
10	9 47 24.65	2.1168	18 33 45.2	11.309
11	9 49 31.47	2.1105	18 22 24.2	11.389
12	9 51 37.91	2.1043	18 10 58.5	11.467
13	9 53 43.98	2.0982	17 59 28.2	11.544
14	9 55 49.69	2.0921	17 47 53.2	11.621
15	9 57 55.03	2.0860	17 36 13.7	11.695
16	10 0 0.01	2.0799	17 24 29.8	11.768
17	10 2 4.62	2.0738	17 12 41.6	11.839
18	10 4 8.87	2.0678	17 0 49.1	11.910
19	10 6 12.76	2.0619	16 48 52.4	11.979
20	10 8 16.30	2.0560	16 36 51.6	12.047
21	10 10 19.49	2.0502	16 24 46.8	12.113
22	10 12 22.33	2.0445	16 12 38.0	12.179
23	10 14 24.83	2.0387	N.16 0 25.3	12.242

MONDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 16 26.98	2.0330	N.15 48 8.9	12.304
1	10 18 28.79	2.0274	15 35 48.8	12.366
2	10 20 30.27	2.0218	15 23 25.0	12.427
3	10 22 31.41	2.0162	15 10 57.6	12.486
4	10 24 32.22	2.0107	14 58 26.7	12.543
5	10 26 32.70	2.0053	14 45 52.4	12.599
6	10 28 32.86	1.9999	14 33 14.8	12.654
7	10 30 32.69	1.9946	14 20 33.9	12.708
8	10 32 32.21	1.9893	14 7 49.8	12.761
9	10 34 31.41	1.9841	13 55 2.6	12.812
10	10 36 30.30	1.9790	13 42 12.3	12.863
11	10 38 28.89	1.9739	13 29 19.0	12.912
12	10 40 27.17	1.9688	13 16 22.9	12.959
13	10 42 25.15	1.9638	13 3 24.0	13.006
14	10 44 22.83	1.9589	12 50 22.2	13.052
15	10 46 20.22	1.9541	12 37 17.7	13.097
16	10 48 17.32	1.9493	12 24 10.6	13.139
17	10 50 14.14	1.9446	12 11 1.0	13.181
18	10 52 10.67	1.9399	11 57 48.9	13.222
19	10 54 6.92	1.9352	11 44 34.4	13.262
20	10 56 2.90	1.9307	11 31 17.5	13.301
21	10 57 58.61	1.9262	11 17 58.3	13.338
22	10 59 54.05	1.9218	11 4 36.9	13.374
23	11 1 49.23	1.9175	10 51 13.4	13.409
24	11 3 44.15	1.9132	N.10 37 47.8	13.443

TUESDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 3 44.15	1.9132	N.10 37 47.8	13.443
1	11 5 38.81	1.9089	10 24 20.2	13.477
2	11 7 33.22	1.9048	10 10 50.6	13.509
3	11 9 27.39	1.9007	9 57 19.1	13.541
4	11 11 21.31	1.8967	9 43 45.7	13.571
5	11 13 14.99	1.8927	9 30 10.6	13.599
6	11 15 8.43	1.8888	9 16 33.8	13.627
7	11 17 1.64	1.8850	9 2 55.3	13.654
8	11 18 54.63	1.8812	8 49 15.3	13.679
9	11 20 47.39	1.8775	8 35 33.8	13.704
10	11 22 39.93	1.8739	8 21 50.8	13.728
11	11 24 32.26	1.8704	8 8 6.4	13.751
12	11 26 24.38	1.8669	7 54 20.7	13.772
13	11 28 16.29	1.8635	7 40 33.7	13.793
14	11 30 8.00	1.8601	7 26 45.5	13.813
15	11 31 59.50	1.8568	7 12 56.1	13.832
16	11 33 50.81	1.8536	6 59 5.6	13.851
17	11 35 41.93	1.8505	6 45 14.0	13.868
18	11 37 32.87	1.8474	6 31 21.4	13.884
19	11 39 23.62	1.8443	6 17 27.9	13.899
20	11 41 14.19	1.8414	6 3 33.5	13.913
21	11 43 4.59	1.8386	5 49 38.3	13.927
22	11 44 54.82	1.8358	5 35 42.3	13.939
23	11 46 44.89	1.8331	N. 5 21 45.6	13.950

WEDNESDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	11 48 34.79	1.8304	N. 5 7 48.3	13.960
1	11 50 24.53	1.8277	4 53 50.4	13.970
2	11 52 14.12	1.8253	4 39 51.9	13.980
3	11 54 3.57	1.8229	4 25 52.8	13.988
4	11 55 52.87	1.8205	4 11 53.3	13.994
5	11 57 42.03	1.8182	3 57 53.5	14.000
6	11 59 31.05	1.8159	3 43 53.3	14.006
7	12 1 19.93	1.8137	3 29 52.8	14.010
8	12 3 8.69	1.8117	3 15 52.1	14.014
9	12 4 57.33	1.8097	3 1 51.1	14.017
10	12 6 45.85	1.8077	2 47 50.0	14.018
11	12 8 34.25	1.8057	2 33 48.9	14.019
12	12 10 22.54	1.8039	2 19 47.7	14.020
13	12 12 10.72	1.8022	2 5 46.5	14.019
14	12 13 58.80	1.8005	1 51 45.4	14.018
15	12 15 46.78	1.7988	1 37 44.4	14.016
16	12 17 34.66	1.7973	1 23 43.5	14.013
17	12 19 22.46	1.7959	1 9 42.8	14.009
18	12 21 10.17	1.7945	0 55 42.4	14.004
19	12 22 57.80	1.7931	0 41 42.3	13.999
20	12 24 45.35	1.7918	0 27 42.5	13.993
21	12 26 32.82	1.7907	N. 0 13 43.1	13.986
22	12 28 20.23	1.7896	S. 0 0 15.8	13.978
23	12 30 7.57	1.7885	0 14 14.2	13.969
24	12 31 54.85	1.7875	S. 0 28 12.1	13.960

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 31 54.85	1.7875	S. 0 28 12.1	13.960
1	12 33 42.07	1.7866	0 42 9.4	13.950
2	12 35 29.24	1.7857	0 56 6.1	13.940
3	12 37 16.36	1.7850	1 10 2.2	13.928
4	12 39 3.44	1.7843	1 23 57.5	13.915
5	12 40 50.48	1.7837	1 37 52.0	13.902
6	12 42 37.48	1.7831	1 51 45.8	13.889
7	12 44 24.45	1.7826	2 5 38.7	13.874
8	12 46 11.39	1.7822	2 19 30.7	13.859
9	12 47 58.31	1.7818	2 33 21.8	13.843
10	12 49 45.21	1.7816	2 47 11.9	13.827
11	12 51 32.10	1.7813	3 1 1.0	13.809
12	12 53 18.97	1.7812	3 14 49.0	13.791
13	12 55 5.84	1.7811	3 28 35.9	13.772
14	12 56 52.70	1.7810	3 42 21.6	13.752
15	12 58 39.56	1.7811	3 56 6.1	13.732
16	13 0 26.43	1.7812	4 9 49.4	13.711
17	13 2 13.31	1.7814	4 23 31.4	13.689
18	13 4 0.20	1.7817	4 37 12.1	13.667
19	13 5 47.11	1.7820	4 50 51.5	13.644
20	13 7 34.04	1.7824	5 4 29.4	13.619
21	13 9 21.00	1.7829	5 18 5.8	13.594
22	13 11 7.99	1.7834	5 31 40.7	13.569
23	13 12 55.01	1.7840	S. 5 45 14.1	13.543

FRIDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 14 42.07	1.7847	S. 5 58 45.9	13.517
1	13 16 29.17	1.7854	6 12 16.1	13.489
2	13 18 16.32	1.7862	6 25 44.6	13.461
3	13 20 3.52	1.7871	6 39 11.4	13.432
4	13 21 50.77	1.7880	6 52 36.5	13.402
5	13 23 38.08	1.7890	7 5 59.7	13.372
6	13 25 25.45	1 7901	7 19 21.1	13.341
7	13 27 12.89	1.7912	7 32 40.6	13.309
8	13 29 0.40	1.7924	7 45 58.2	13.277
9	13 30 47.98	1.7937	7 59 13.9	13.244
10	13 32 35.64	1.7950	8 12 27.5	13.210
11	13 34 23.38	1.7964	8 25 39.1	13.176
12	13 36 11.21	1.7979	8 38 48.6	13.141
13	13 37 59.13	1.7994	8 51 56.0	13.105
14	13 39 47.14	1.8010	9 5 1.2	13.068
15	13 41 35.25	1.8027	9 18 4.2	13.031
16	13 43 23.46	1.8044	9 31 5.0	12.993
17	13 45 11.78	1.8062	9 44 3.4	12.954
18	13 47 0.20	1.8080	9 56 59.5	12.915
19	13 48 48.74	1.8100	10 9 53.2	12.875
20	13 50 37.40	1.8120	10 22 44.5	12.835
21	13 52 26.18	1.8140	10 35 33.4	12.794
22	13 54 15.08	1.8161	10 48 19.8	12.752
23	13 56 4.11	1.8183	11 1 3.6	12.708
24	13 57 53.28	1.8206	S. 11 13 44.8	12.665

SATURDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 57 53.28	1.8206	S. 11 13 44.8	12.665
1	13 59 42.59	1.8229	11 26 23.4	12.621
2	14 1 32.03	1.8252	11 38 59.3	12.576
3	14 3 21.61	1.8276	11 51 32.5	12.530
4	14 5 11.34	1.8301	12 4 2.9	12.484
5	14 7 1.23	1.8327	12 16 30.5	12.437
6	14 8 51.27	1.8353	12 28 55.3	12.389
7	14 10 41.47	1.8380	12 41 17.2	12.340
8	14 12 31.83	1.8408	12 53 36.1	12.291
9	14 14 22.36	1.8436	13 5 52.1	12.242
10	14 16 13.06	1.8464	13 18 5.1	12.191
11	14 18 3.93	1.8492	13 30 15.0	12.139
12	14 19 54.97	1.8522	13 42 21.7	12.086
13	14 21 46.20	1.8553	13 54 25.3	12.033
14	14 23 37.61	1.8584	14 6 25.7	11.980
15	14 25 29.21	1.8616	14 18 22.9	11.926
16	14 27 21.00	1.8648	14 30 16.8	11.871
17	14 29 12.99	1.8681	14 42 7.4	11.815
18	14 31 5.17	1.8714	14 53 54.6	11.758
19	14 32 57.56	1.8748	15 5 38.4	11.701
20	14 34 50.15	1.8782	15 17 18.7	11.642
21	14 36 42.95	1.8817	15 28 55.5	11.583
22	14 38 35.96	1.8853	15 40 28.7	11.523
23	14 40 29.19	1.8890	S. 15 51 58.3	11.463

SUNDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 42 22.64	1.8927	S. 16 3 24.3	11.402
1	14 44 16.31	1.8964	16 14 46.6	11.340
2	14 46 10.21	1.9001	16 26 5.1	11.277
3	14 48 4.33	1.9039	16 37 19.8	11.213
4	14 49 58.68	1.9078	16 48 30.7	11.149
5	14 51 53.27	1.9118	16 59 37.7	11.084
6	14 53 48.10	1.9158	17 10 40.8	11.018
7	14 55 43.17	1.9198	17 21 39.9	10.951
8	14 57 38.48	1.9239	17 32 34.9	10.884
9	14 59 34.04	1.9281	17 43 25.9	10.816
10	15 1 29.85	1.9322	17 54 12.8	10.747
11	15 3 25.91	1.9364	18 4 55.5	10.676
12	15 5 22.22	1.9407	18 15 33.9	10.605
13	15 7 18.79	1.9451	18 26 8.1	10.533
14	15 9 15.63	1.9495	18 36 37.9	10.461
15	15 11 12.73	1.9539	18 47 3.4	10.388
16	15 13 10.10	1.9584	18 57 24.5	10.314
17	15 15 7.74	1.9629	19 7 41.1	10.238
18	15 17 5.65	1.9675	19 17 53.1	10.162
19	15 19 3.84	1.9721	19 28 0.5	10.086
20	15 21 2.30	1.9767	19 38 3.4	10.009
21	15 23 1.04	1.9814	19 48 1.6	9.930
22	15 25 0.07	1.9861	19 57 55.0	9.851
23	15 26 59.38	1.9908	20 7 43.7	9.771
24	15 28 58.97	1.9956	S. 20 17 27.5	9.689

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 28 58.97	1.9956	S.20 17 27.5	9.689
1	15 30 58.85	2.0005	20 27 6.4	9.607
2	15 32 59.03	2.0054	20 36 40.4	9.525
3	15 34 59.50	2.0103	20 46 9.4	9.441
4	15 37 0.27	2.0152	20 55 33.3	9.356
5	15 39 1.33	2.0202	21 4 52.1	9.271
6	15 41 2.69	2.0252	21 14 5.8	9.185
7	15 43 4.35	2.0302	21 23 14.3	9.097
8	15 45 6.32	2.0353	21 32 17.5	9.008
9	15 47 8.59	2.0404	21 41 15.3	8.919
10	15 49 11.17	2.0455	21 50 7.8	8.830
11	15 51 14.05	2.0506	21 58 54.9	8.739
12	15 53 17.24	2.0558	22 7 36.5	8.647
13	15 55 20.74	2.0610	22 16 12.5	8.554
14	15 57 24.56	2.0662	22 24 43.0	8.461
15	15 59 28.69	2.0715	22 33 7.8	8.366
16	16 1 33.14	2.0767	22 41 26.9	8.270
17	16 3 37.90	2.0820	22 49 40.2	8.172
18	16 5 42.98	2.0873	22 57 47.6	8.074
19	16 7 48.38	2.0926	23 5 49.1	7.976
20	16 9 54.10	2.0979	23 13 44.8	7.878
21	16 12 0.13	2.1033	23 21 34.5	7.778
22	16 14 6.49	2.1086	23 29 18.2	7.676
23	16 16 13.17	2.1139	S.23 36 55.7	7.573

TUESDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 18 20.16	2.1193	S.23 44 27.0	7.470
1	16 20 27.48	2.1247	23 51 52.1	7.367
2	16 22 35.12	2.1300	23 59 11.0	7.262
3	16 24 43.08	2.1354	24 6 23.5	7.155
4	16 26 51.37	2.1408	24 13 29.6	7.048
5	16 28 59.98	2.1462	24 20 29.3	6.940
6	16 31 8.91	2.1515	24 27 22.4	6.830
7	16 33 18.16	2.1569	24 34 8.9	6.721
8	16 35 27.74	2.1623	24 40 48.9	6.611
9	16 37 37.64	2.1677	24 47 22.2	6.499
10	16 39 47.86	2.1730	24 53 48.7	6.386
11	16 41 58.40	2.1783	25 0 8.5	6.272
12	16 44 9.26	2.1837	25 6 21.4	6.157
13	16 46 20.44	2.1890	25 12 27.3	6.041
14	16 48 31.94	2.1943	25 18 26.3	5.925
15	16 50 43.75	2.1995	25 24 18.3	5.807
16	16 52 55.88	2.2048	25 30 3.2	5.688
17	16 55 8.33	2.2101	25 35 40.9	5.568
18	16 57 21.09	2.2153	25 41 11.4	5.448
19	16 59 34.16	2.2204	25 46 34.7	5.326
20	17 1 47.54	2.2256	25 51 50.6	5.203
21	17 4 1.24	2.2308	25 56 59.1	5.080
22	17 6 15.24	2.2359	26 2 0.2	4.957
23	17 8 29.55	2.2410	26 6 53.9	4.832
24	17 10 44.16	2.2460	S.26 11 40.0	4.705

WEDNESDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	17 10 44.16	2.2460	S.26 11 40.0	4.705
1	17 12 59.07	2.2510	26 16 18.5	4.578
2	17 15 14.28	2.2560	26 20 49.3	4.450
3	17 17 29.79	2.2609	26 25 12.5	4.322
4	17 19 45.59	2.2657	26 29 27.9	4.191
5	17 22 1.68	2.2706	26 33 35.4	4.060
6	17 24 18.06	2.2754	26 37 35.1	3.928
7	17 26 34.73	2.2802	26 41 26.8	3.796
8	17 28 51.69	2.2850	26 45 10.6	3.662
9	17 31 8.93	2.2896	26 48 46.3	3.527
10	17 33 26.44	2.2941	26 52 13.9	3.392
11	17 35 44.22	2.2987	26 55 33.4	3.257
12	17 38 2.28	2.3032	26 58 44.8	3.121
13	17 40 20.61	2.3077	27 1 47.9	2.982
14	17 42 39.20	2.3119	27 4 42.7	2.843
15	17 44 58.04	2.3162	27 7 29.1	2.704
16	17 47 17.14	2.3204	27 10 7.2	2.564
17	17 49 36.49	2.3247	27 12 36.8	2.423
18	17 51 56.10	2.3288	27 14 58.0	2.282
19	17 54 15.95	2.3328	27 17 10.7	2.139
20	17 56 36.04	2.3367	27 19 14.7	1.995
21	17 58 56.36	2.3406	27 21 10.1	1.851
22	18 1 16.91	2.3444	27 22 56.8	1.706
23	18 3 37.69	2.3482	S.27 24 34.8	1.561

THURSDAY, SEPTEMBER 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	18 5 58.70	2.3519	S.27 26 4.1	1.415

PHASES OF THE MOON.

			d	h	m
○	Full Moon .	August	7	23	57.2
☾	Last Quarter		14	18	37.2
●	New Moon		21	22	58.9
☽	First Quarter . . .		30	1	28.9

			d	h
☾	Perigee . . .	August	11	22.5
☾	Apogee		27	13.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	**Sun**	W.	97° 21′ 44″	3426	98° 43′ 31″	3420	100° 5′ 25″	3415	101° 27′ 25″	3408
	Saturn	W.	50 7 27	3081	51 36 0	3076	53 4 39	3070	54 33 25	3065
	Spica	W.	24 42 14	3096	26 10 29	3086	27 38 56	3076	29 7 35	3065
	α Aquilæ	E.	75 39 2	3942	74 26 25	3950	73 13 56	3959	72 1 36	3970
	Mars	E.	85 59 52	2951	84 28 38	2946	82 57 17	2941	81 25 50	2935
2	**Sun**	W.	108 19 20	3371	109 42 10	3362	111 5 10	3352	112 28 21	3344
	Saturn	W.	61 59 14	3028	63 28 52	3020	64 58 40	3010	66 28 40	3001
	Spica	W.	36 33 51	3017	38 3 43	3007	39 33 47	2997	41 4 4	2986
	α Aquilæ	E.	66 2 50	4037	64 51 47	4055	63 41 2	4075	62 30 36	4098
	Mars	E.	73 46 31	2899	72 14 11	2891	70 41 41	2883	69 9 0	2873
	Fomalhaut	E.	92 41 53	3171	91 15 9	3162	89 48 14	3153	88 21 9	3144
3	**Saturn**	W.	74 1 41	2949	75 32 58	2938	77 4 29	2926	78 36 15	2913
	Spica	W.	48 38 55	2929	50 10 37	2917	51 42 34	2905	53 14 47	2892
	α Aquilæ	E.	56 44 28	4244	55 36 43	4283	54 29 35	4327	53 23 7	4374
	Mars	E.	61 22 30	2823	59 48 32	2811	58 14 19	2800	56 39 51	2788
	Fomalhaut	E.	81 2 58	3097	79 34 45	3088	78 6 21	3078	76 37 45	3069
	α Pegasi	E.	101 8 8	3295	99 43 51	3280	98 19 16	3265	96 54 24	3251
4	**Saturn**	W.	86 19 4	2849	87 52 28	2836	89 26 9	2822	91 0 8	2808
	Spica	W.	61 0 0	2825	62 33 55	2812	64 8 7	2798	65 42 38	2784
	Mars	E.	48 43 37	2727	47 7 33	2713	45 31 11	2701	43 54 32	2687
	Fomalhaut	E.	69 11 52	3022	67 42 7	3014	66 12 12	3005	64 42 6	2998
	α Pegasi	E.	89 45 53	3182	88 19 22	3169	86 52 36	3157	85 25 35	3144
5	**Saturn**	W.	98 54 40	2737	100 30 31	2722	102 6 42	2707	103 43 12	2692
	Spica	W.	73 39 53	2711	75 16 18	2697	76 53 2	2682	78 30 6	2667
	Antares	W.	27 45 48	2717	29 22 5	2701	30 58 43	2686	32 35 42	2670
	Mars	E.	35 46 44	2619	34 8 15	2606	32 29 28	2593	30 50 23	2579
	Fomalhaut	E.	57 9 21	2966	55 38 26	2962	54 7 25	2959	52 36 21	2957
	α Pegasi	E.	78 6 56	3090	76 38 34	3080	75 10 0	3071	73 41 15	3064
6	Spica	W.	86 40 23	2594	88 19 26	2580	89 58 48	2566	91 38 30	2551
	Antares	W.	40 45 52	2593	42 24 56	2578	44 4 21	2564	45 44 5	2549
	Fomalhaut	E.	45 1 4	2973	43 30 18	2983	41 59 44	2997	40 29 27	3014
	α Pegasi	E.	66 15 27	3037	64 46 0	3035	63 16 31	3034	61 47 1	3036
	Jupiter	E.	95 32 57	2593	93 53 53	2578	92 14 28	2564	90 34 43	2550
7	Antares	W.	54 7 46	2480	55 49 28	2466	57 31 29	2453	59 13 48	2440
	α Pegasi	E.	54 20 37	3070	52 51 51	3084	51 23 22	3101	49 55 14	3124
	Jupiter	E.	82 11 8	2481	80 29 28	2467	78 47 29	2455	77 5 12	2441
	α Arietis	E.	94 21 17	2547	92 41 9	2534	91 0 43	2521	89 19 59	2508
8	Antares	W.	67 49 48	2381	69 33 50	2371	71 18 7	2360	73 2 39	2350
	Jupiter	E.	68 29 23	2382	66 45 23	2372	65 1 8	2361	63 16 37	2351
	α Arietis	E.	80 52 6	2452	79 9 45	2442	77 27 10	2433	75 44 22	2424
9	Antares	W.	81 48 50	2305	83 34 42	2297	85 20 46	2290	87 7 0	2283
	α Aquilæ	W.	44 41 15	4446	45 45 55	4308	46 52 40	4184	48 1 21	4071
	Jupiter	E.	54 30 34	2306	52 44 43	2298	50 58 40	2291	49 12 27	2283
	α Arietis	E.	67 7 27	2388	65 23 35	2382	63 39 35	2378	61 55 28	2374

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV$^{\text{h}}$.	P. L. of Diff.	XVIII$^{\text{h}}$.	P. L. of Diff.	XXI$^{\text{h}}$.	P. L. of Diff.
1	Sun	W.	102° 49′ 32″	3401	104° 11′ 47″	3395	105° 34′ 9″	3387	106° 56′ 40″	3379
	Saturn	W.	56 2 18	3058	57 31 19	3052	59 0 28	3044	60 29 46	3036
	Spica	W.	30 36 27	3056	32 5 30	3047	33 34 45	3037	35 4 12	3027
	α Aquilæ	E.	70 49 27	3981	69 37 29	3992	68 25 42	4005	67 14 9	4021
	Mars	E.	79 54 15	2928	78 22 32	2922	76 50 41	2915	75 18 41	2907
2	Sun	W.	113 51 42	3333	115 15 15	3323	116 39 0	3312	118 2 58	3300
	Saturn	W.	67 58 51	2992	69 29 14	2981	70 59 50	2971	72 30 39	2961
	Spica	W.	42 34 34	2975	44 5 18	2964	45 36 16	2953	47 7 28	2941
	α Aquilæ	E.	61 20 32	4120	60 10 50	4147	59 1 34	4177	57 52 46	4209
	Mars	E.	67 36 7	2864	66 3 2	2855	64 29 45	2844	62 56 14	2834
	Fomalhaut	E.	86 53 53	3135	85 26 26	3126	83 58 48	3117	82 30 59	3107
3	Saturn	W.	80 8 17	2901	81 40 35	2889	83 13 8	2876	84 45 58	2863
	Spica	W.	54 47 16	2879	56 20 2	2866	57 53 4	2853	59 26 23	2839
	α Aquilæ	E.	52 17 22	4427	51 12 25	4485	50 8 20	4550	49 5 12	4622
	Mars	E.	55 5 8	2776	53 30 9	2765	51 54 55	2752	50 19 24	2740
	Fomalhaut	E.	75 8 58	3060	73 39 59	3050	72 10 48	3041	70 41 26	3031
	α Pegasi	E.	95 29 15	3236	94 3 49	3223	92 38 7	3209	91 12 8	3195
4	Saturn	W.	92 34 25	2794	94 9 1	2780	95 43 55	2766	97 19 8	2751
	Spica	W.	67 17 27	2769	68 52 35	2755	70 28 2	2741	72 3 48	2726
	Mars	E.	42 17 35	2674	40 40 20	2660	39 2 46	2646	37 24 54	2633
	Fomalhaut	E.	63 11 51	2990	61 41 26	2983	60 10 52	2977	58 40 10	2971
	α Pegasi	E.	83 58 19	3133	82 30 49	3120	81 3 4	3110	79 35 6	3100
5	Saturn	W.	105 20 2	2678	106 57 11	2663	108 34 40	2649	110 12 29	2635
	Spica	W.	80 7 30	2652	81 45 14	2638	83 23 17	2624	85 1 40	2609
	Antares	W.	34 13 2	2655	35 50 43	2639	37 28 45	2624	39 7 8	2608
	Mars	E.	29 10 59	2566	27 31 17	2553	25 51 17	2540	24 10 59	2527
	Fomalhaut	E.	51 5 14	2957	49 34 7	2958	48 3 1	2961	46 31 59	2966
	α Pegasi	E.	72 12 21	3056	70 43 18	3050	69 14 7	3045	67 44 50	3040
6	Spica	W.	93 18 32	2538	94 58 53	2524	96 39 33	2510	98 20 32	2497
	Antares	W.	47 24 10	2535	49 4 35	2521	50 45 19	2507	52 26 23	2493
	Fomalhaut	E.	38 59 31	3035	37 30 2	3061	36 1 5	3095	34 32 49	3134
	α Pegasi	E.	60 17 33	3039	58 48 8	3043	57 18 49	3049	55 49 37	3059
	Jupiter	E.	88 54 39	2535	87 14 15	2522	85 33 32	2507	83 52 29	2494
7	Antares	W.	60 56 26	2428	62 39 21	2416	64 22 33	2404	66 6 2	2392
	α Pegasi	E.	48 27 33	3148	47 0 22	3178	45 33 47	3214	44 7 54	3254
	Jupiter	E.	75 22 36	2429	73 39 43	2417	71 56 33	2405	70 13 6	2394
	α Arietis	E.	87 38 57	2496	85 57 38	2485	84 16 3	2473	82 34 12	2462
8	Antares	W.	74 47 26	2340	76 32 27	2331	78 17 42	2322	80 3 10	2313
	Jupiter	E.	61 31 52	2341	59 46 52	2332	58 1 39	2323	56 16 13	2314
	α Arietis	E.	74 1 21	2416	72 18 9	2408	70 34 45	2401	68 51 11	2394
9	Antares	W.	88 53 25	2277	90 39 59	2270	92 26 43	2264	94 13 35	2260
	α Aquilæ	W.	49 11 51	3969	50 24 1	3876	51 37 45	3792	52 52 56	3715
	Jupiter	E.	47 26 3	2277	45 39 29	2270	43 52 46	2265	42 5 55	2259
	α Arietis	E.	60 11 16	2371	58 26 59	2368	56 42 39	2367	54 58 17	2366

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	α Aquilæ	W.	54° 9′ 27″	3645	55° 27′ 13″	3580	56° 46′ 9″	3523	58° 6′ 8″	3469
	Mars	W.	33 56 42	2181	35 45 38	2176	37 34 41	2172	39 23 51	2169
	Jupiter	E.	40 18 55	2253	38 31 47	2249	36 44 33	2245	34 57 13	2241
	α Arietis	E.	53 13 54	2366	51 29 31	2368	49 45 11	2371	48 0 54	2375
	Aldebaran	E.	83 16 47	2291	81 30 34	2287	79 44 15	2283	77 57 51	2280
11	α Aquilæ	W.	64 59 23	3268	66 24 12	3238	67 49 36	3211	69 15 32	3188
	Mars	W.	48 30 53	2155	50 20 28	2154	52 10 5	2153	53 59 43	2153
	Fomalhaut	W.	31 22 49	2946	32 54 10	2878	34 26 57	2820	36 0 59	2769
	α Arietis	E.	39 21 32	2417	37 38 21	2431	35 55 31	2449	34 13 6	2471
	Aldebaran	E.	69 4 55	2272	67 18 14	2272	65 31 33	2272	63 44 53	2273
12	α Aquilæ	W.	76 31 20	3104	77 59 25	3094	79 27 42	3085	80 56 10	3078
	Mars	W.	63 7 56	2155	64 57 32	2157	66 47 5	2158	68 36 36	2161
	Fomalhaut	W.	44 5 3	2604	45 43 52	2583	47 23 11	2564	49 2 55	2548
	Aldebaran	E.	54 52 8	2286	53 5 48	2290	51 19 34	2295	49 33 27	2301
	Venus	E.	88 37 31	2421	86 54 26	2423	85 11 24	2426	83 28 27	2429
13	Mars	W.	77 43 15	2174	79 32 21	2178	81 21 22	2182	83 10 17	2186
	Fomalhaut	W.	57 26 11	2497	59 7 28	2491	60 48 54	2487	62 30 26	2483
	α Pegasi	W.	40 37 30	3198	42 3 41	3138	43 31 4	3085	44 59 32	3038
	Aldebaran	E.	40 45 21	2342	39 0 23	2353	37 15 40	2365	35 31 15	2380
	Venus	E.	74 55 2	2452	73 12 41	2458	71 30 29	2464	69 48 25	2471
	Pollux	E.	84 14 17	2246	82 26 58	2250	80 39 45	2253	78 52 37	2257
14	Fomalhaut	W.	70 59 0	2477	72 40 46	2478	74 22 30	2480	76 4 12	2482
	α Pegasi	W.	52 34 17	2876	54 7 6	2855	55 40 23	2836	57 14 4	2819
	Venus	E.	61 20 35	2509	59 39 34	2518	57 58 46	2527	56 18 11	2537
	Pollux	E.	69 58 26	2279	68 11 56	2284	66 25 33	2289	64 39 18	2294
	Sun	E.	100 12 13	2599	98 33 16	2604	96 54 26	2609	95 15 43	2614
15	Fomalhaut	W.	84 31 41	2500	86 12 54	2505	87 54 0	2511	89 34 58	2517
	α Pegasi	W.	65 6 58	2766	66 42 10	2761	68 17 29	2756	69 52 55	2753
	Jupiter	W.	31 10 5	2317	32 55 40	2323	34 41 6	2328	36 26 24	2335
	Venus	E.	47 58 54	2595	46 19 52	2610	44 41 10	2624	43 2 47	2640
	Pollux	E.	55 49 59	2322	54 4 32	2328	52 19 14	2334	50 34 4	2341
	Sun	E.	87 4 2	2643	85 26 6	2650	83 48 19	2656	82 10 40	2663
16	α Pegasi	W.	77 50 44	2750	79 26 17	2752	81 1 48	2755	82 37 15	2758
	Jupiter	W.	45 10 44	2364	46 55 10	2371	48 39 27	2377	50 23 35	2384
	α Arietis	W.	34 24 12	2591	36 3 20	2579	37 42 44	2570	39 22 20	2563
	Pollux	E.	41 50 35	2373	40 6 22	2380	38 22 18	2387	36 38 24	2394
	Sun	E.	74 4 41	2697	72 27 57	2704	70 51 22	2711	69 14 57	2719
17	Jupiter	W.	59 1 53	2417	60 45 5	2424	62 28 6	2431	64 10 57	2437
	α Arietis	W.	47 42 2	2550	49 22 6	2550	51 2 10	2551	52 42 12	2553
	Sun	E.	61 15 23	2757	59 39 59	2766	58 4 46	2774	56 29 44	2782
18	Jupiter	W.	72 42 46	2472	74 24 38	2480	76 6 19	2487	77 47 50	2493
	α Arietis	W.	61 1 27	2570	62 41 3	2575	64 20 32	2580	65 59 55	2585
	Aldebaran	W.	30 41 34	2627	32 19 52	2621	33 58 18	2618	35 36 49	2615
	Sun	E.	48 37 22	2827	47 3 29	2836	45 29 48	2846	43 56 20	2856

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	α Aquilæ	W.	59° 27′ 7″	3421	60° 49′ 0″	3377	62° 11′ 43″	3337	63° 35′ 12″	3300
	Mars	W.	41 13 6	2165	43 2 27	2162	44 51 52	2159	46 41 21	2157
	Jupiter	E.	33 9 47	2238	31 22 16	2235	29 34 41	2233	27 47 2	2230
	α Arietis	E.	46 16 43	2380	44 32 39	2386	42 48 44	2394	41 5 1	2404
	Aldebaran	E.	76 11 22	2277	74 24 49	2275	72 38 13	2274	70 51 35	2272
11	α Aquilæ	W.	70 41 56	3166	72 8 46	3148	73 35 58	3131	75 3 30	3116
	Mars	W.	55 49 22	2153	57 39 1	2153	59 28 40	2153	61 18 19	2154
	Fomalhaut	W.	37 36 8	2726	39 12 13	2689	40 49 8	2657	42 26 46	2628
	α Arietis	E.	32 31 12	2496	30 49 53	2527	29 9 17	2563	27 29 31	2606
	Aldebaran	E.	61 58 14	2275	60 11 38	2277	58 25 4	2279	56 38 34	2282
12	α Aquilæ	W.	82 24 46	3073	83 53 28	3070	85 22 14	3069	86 51 1	3069
	Mars	W.	70 26 3	2163	72 15 27	2165	74 4 48	2168	75 54 4	2171
	Fomalhaut	W.	50 43 1	2535	52 23 26	2522	54 4 8	2512	55 45 4	2504
	Aldebaran	E.	47 47 29	2307	46 1 40	2314	44 16 1	2322	42 30 34	2332
	Venus	E.	81 45 34	2433	80 2 47	2437	78 20 5	2442	76 37 30	2447
13	Mars	W.	84 59 6	2190	86 47 49	2194	88 36 25	2199	90 24 54	2204
	Fomalhaut	W.	64 12 3	2480	65 53 44	2478	67 35 28	2477	69 17 14	2477
	α Pegasi	W.	46 28 58	2997	47 59 15	2961	49 30 17	2929	51 1 59	2901
	Aldebaran	E.	33 47 11	2396	32 3 30	2415	30 20 16	2436	28 37 33	2462
	Venus	E.	68 6 31	2477	66 24 46	2485	64 43 12	2492	63 1 48	2500
	Pollux	E.	77 5 34	2261	75 18 37	2266	73 31 47	2270	71 45 3	2274
14	Fomalhaut	W.	77 45 51	2485	79 27 26	2488	81 8 56	2492	82 50 21	2495
	α Pegasi	W.	58 48 7	2805	60 22 28	2793	61 57 5	2782	63 31 56	2774
	Venus	E.	54 37 49	2548	52 57 42	2559	51 17 50	2570	49 38 14	2582
	Pollux	E.	62 53 10	2300	61 7 10	2305	59 21 18	2311	57 35 34	2317
	Sun	E.	92 37 7	2620	91 58 39	2626	90 20 19	2631	88 42 6	2638
15	Fomalhaut	W.	91 15 48	2522	92 56 30	2530	94 37 2	2537	96 17 24	2544
	α Pegasi	W.	71 28 25	2750	73 3 58	2749	74 39 33	2748	76 15 9	2749
	Jupiter	W.	38 11 33	2340	39 56 34	2346	41 41 26	2353	43 26 9	2358
	Venus	E.	41 24 46	2657	39 47 8	2675	38 9 54	2695	36 33 7	2716
	Pollux	E.	48 49 4	2347	47 4 13	2353	45 19 31	2359	43 34 58	2366
	Sun	E.	80 33 10	2669	78 55 49	2676	77 18 37	2683	75 41 34	2690
16	α Pegasi	W.	84 12 38	2763	85 47 55	2768	87 23 5	2773	88 58 8	2779
	Jupiter	W.	52 7 33	2390	53 51 22	2396	55 35 2	2403	57 18 32	2410
	α Arietis	W.	41 2 6	2558	42 41 59	2554	44 21 57	2552	46 1 58	2550
	Pollux	E.	34 54 40	2401	33 11 7	2408	31 27 44	2416	29 44 32	2424
	Sun	E.	67 38 42	2726	66 2 37	2734	64 26 42	2741	62 50 57	2750
17	Jupiter	W.	65 53 39	2444	67 36 11	2451	69 18 33	2458	71 0 45	2466
	α Arietis	W.	54 22 11	2556	56 2 7	2559	57 41 59	2562	59 21 46	2566
	Sun	E.	54 54 53	2791	53 20 13	2799	51 45 44	2808	50 11 27	2818
18	Jupiter	W.	79 29 10	2503	81 10 19	2510	82 51 18	2518	84 32 6	2526
	α Arietis	W.	67 39 10	2591	69 18 17	2597	70 57 16	2604	72 36 6	2610
	Aldebaran	W.	37 15 24	2615	38 53 59	2615	40 32 34	2616	42 11 7	2619
	Sun	E.	42 23 5	2866	40 50 3	2877	39 17 15	2888	37 44 41	2900

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
19	**Jupiter**	W.	86° 12′ 43″	2534	87° 53′ 9″	2543	89° 33′ 23″	2551	91° 13′ 26″	2559
	α Arietis	W.	74 14 48	2617	75 53 20	2624	77 31 43	2631	79 9 56	2639
	Aldebaran	W.	43 49 36	2622	45 28 1	2625	47 6 22	2629	48 44 37	2635
	Sun	E.	36 12 22	2912	34 40 18	2924	33 8 29	2937	31 36 57	2951
20	α Arietis	W.	87 18 20	2680	88 55 27	2688	90 32 23	2698	92 9 6	2707
	Aldebaran	W.	56 54 2	2664	58 31 30	2672	60 8 48	2679	61 45 56	2687
	Sun	E.	24 4 5	3038	22 34 39	3060	21 5 41	3087	19 37 15	3116
23	**Sun**	W.	12 53 20	3480	14 14 6	3438	15 35 40	3409	16 57 46	3389
	Spica	E.	39 52 10	2860	38 19 0	2872	36 46 5	2883	35 13 24	2894
	Antares	E.	85 41 13	2842	84 7 39	2852	82 34 18	2861	81 1 9	2871
24	**Sun**	W.	23 51 53	3360	25 14 55	3360	26 37 57	3363	28 0 56	3365
	Spica	E.	27 33 47	2956	26 2 39	2970	24 31 49	2985	23 1 18	3001
	Antares	E.	73 18 29	2918	71 46 33	2927	70 14 48	2935	68 43 14	2944
25	**Sun**	W.	34 54 47	3388	36 17 17	3394	37 39 40	3400	39 1 57	3404
	Antares	E.	61 8 5	2985	59 37 34	2993	58 7 12	3001	56 37 0	3007
	Mars	E.	120 14 39	2939	118 43 10	2947	117 11 51	2955	115 40 42	2962
26	**Sun**	W.	45 51 57	3430	47 13 40	3434	48 35 18	3438	49 56 51	3442
	Saturn	W.	19 53 32	3083	21 22 2	3087	22 50 27	3091	24 18 47	3096
	Antares	E.	49 8 3	3039	47 38 39	3044	46 9 21	3049	44 40 9	3055
	Mars	E.	108 7 8	2995	106 36 49	3001	105 6 38	3006	103 36 33	3012
27	**Sun**	W.	56 43 38	3457	58 4 50	3459	59 26 0	3460	60 47 9	3462
	Saturn	W.	31 39 19	3112	33 7 14	3114	34 35 7	3115	36 2 58	3117
	Mars	E.	96 7 36	3031	94 38 2	3034	93 8 32	3037	91 39 5	3039
28	**Sun**	W.	67 32 41	3461	68 53 49	3460	70 14 58	3457	71 36 10	3455
	Saturn	W.	43 21 56	3118	44 49 44	3116	46 17 34	3114	47 45 26	3113
	Spica	W.	20 52 12	3138	22 19 36	3128	23 47 12	3120	25 14 57	3112
	α Aquilæ	E.	78 56 9	3948	77 43 38	3956	76 31 15	3966	75 19 2	3976
	Mars	E.	84 12 19	3043	82 43 0	3043	81 13 40	3042	79 44 19	3041
29	**Sun**	W.	78 22 59	3436	79 44 35	3430	81 6 18	3424	82 28 7	3418
	Saturn	W.	55 5 33	3096	56 33 48	3091	58 2 9	3086	59 30 36	3080
	Spica	W.	32 35 49	3080	34 4 23	3073	35 33 6	3066	37 1 57	3058
	α Aquilæ	E.	69 20 47	4042	68 9 49	4058	66 59 6	4075	65 48 40	4095
	Mars	E.	72 16 58	3026	70 47 18	3022	69 17 33	3018	67 47 43	3013
30	**Sun**	W.	89 19 12	3379	90 41 53	3369	92 4 45	3359	93 27 48	3350
	Saturn	W.	66 54 50	3043	68 24 9	3035	69 53 38	3026	71 23 19	3017
	Spica	W.	44 28 38	3017	45 58 30	3008	47 28 33	2997	48 58 49	2988
	α Aquilæ	E.	60 1 40	4217	58 53 30	4247	57 45 48	4281	56 38 38	4319
	Mars	E.	60 16 44	2980	58 46 6	2973	57 15 19	2964	55 44 21	2956
31	**Sun**	W.	100 26 9	3291	101 50 31	3278	103 15 8	3265	104 40 0	3251
	Spica	W.	56 33 27	2931	58 5 6	2919	59 37 1	2906	61 9 12	2893
	Mars	E.	48 6 35	2905	46 34 22	2893	45 1 54	2882	43 29 12	2869
	α Aquilæ	E.	51 12 27	4566	50 9 33	4631	49 7 35	4703	48 6 38	4782

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV h.	P. L. of Diff.	XVIII h.	P. L. of Diff.	XXI h.	P. L. of Diff.
19	JUPITER	W.	92° 53′ 18″	2567	94° 32′ 58″	2575	96° 12′ 27″	2584	97° 51′ 44″	2592
	α Arietis	W.	80 47 58	2646	82 25 50	2655	84 3 31	2663	85 41 1	2671
	Aldebaran	W.	50 22 45	2640	52 0 46	2645	53 38 40	2652	55 16 25	2657
	SUN	E.	30 5 43	2965	28 34 47	2981	27 4 11	2998	25 33 56	3018
20	α Arietis	W.	93 45 37	2716	95 21 55	2725	96 58 1	2735	98 33 54	2745
	Aldebaran	W.	63 22 54	2694	64 59 42	2702	66 36 19	2710	68 12 45	2718
	SUN	E.	18 9 25	3152	16 42 18	3195	15 16 3	3250	13 50 53	3320
23	SUN	W.	18 20 15	3376	19 42 59	3368	21 5 52	3363	22 28 51	3360
	Spica	E.	33 40 58	2906	32 8 47	2918	30 36 51	2931	29 5 11	2943
	Antares	E.	79 28 13	2880	77 55 29	2890	76 22 57	2899	74 50 37	2909
24	SUN	W.	29 23 52	3370	30 46 43	3373	32 9 30	3379	33 32 11	3383
	Spica	E.	21 31 7	3019	20 1 18	3038	18 31 52	3059	17 2 52	3082
	Antares	E.	67 11 51	2953	65 40 39	2961	64 9 37	2969	62 38 46	2977
25	SUN	W.	40 24 9	3410	41 46 14	3415	43 8 14	3420	44 30 8	3424
	Antares	E.	55 6 56	3014	53 37 1	3021	52 7 14	3027	50 37 35	3033
	MARS	E.	114 9 42	2969	112 38 51	2977	111 8 9	2983	109 37 35	2989
26	SUN	W.	51 18 20	3446	52 39 45	3449	54 1 6	3452	55 22 24	3455
	SATURN	W.	25 47 2	3100	27 15 12	3103	28 43 18	3106	30 11 20	3109
	Antares	E.	43 11 4	3059	41 42 4	3064	40 13 10	3067	38 44 20	3071
	MARS	E.	102 6 35	3017	100 36 43	3021	99 6 56	3025	97 37 14	3028
27	SUN	W.	62 8 16	3463	63 29 22	3463	64 50 28	3463	66 11 34	3462
	SATURN	W.	37 30 47	3118	38 58 35	3119	40 26 22	3119	41 54 9	3119
	MARS	E.	90 9 41	3041	88 40 19	3042	87 10 58	3043	85 41 38	3043
28	SUN	W.	72 57 24	3452	74 18 42	3449	75 40 3	3445	77 1 29	3441
	SATURN	W.	49 13 20	3110	50 41 17	3107	52 9 18	3104	53 37 23	3100
	Spica	W.	26 42 52	3106	28 10 54	3099	29 39 5	3093	31 7 23	3087
	α Aquilæ	E.	74 6 59	3987	72 55 7	4000	71 43 27	4013	70 32 0	4027
	MARS	E.	78 14 57	3039	76 45 32	3036	75 16 4	3034	73 46 33	3030
29	SUN	W.	83 50 3	3411	85 12 7	3403	86 34 20	3396	87 56 41	3387
	SATURN	W.	60 59 10	3073	62 27 52	3067	63 56 42	3060	65 25 41	3052
	Spica	W.	38 30 58	3051	40 0 8	3043	41 29 28	3034	42 58 58	3026
	α Aquilæ	E.	64 38 33	4115	63 28 46	4137	62 19 20	4161	61 10 17	4188
	MARS	E.	66 17 46	3007	64 47 42	3001	63 17 31	2995	61 47 12	2988
30	SUN	W.	94 51 2	3338	96 14 29	3327	97 38 9	3316	99 2 2	3304
	SATURN	W.	72 53 11	3006	74 23 16	2996	75 53 34	2985	77 24 6	2974
	Spica	W.	50 29 19	2977	51 59 59	2966	53 30 54	2955	55 2 3	2943
	α Aquilæ	E.	55 32 3	4359	54 26 5	4404	53 20 47	4453	52 16 13	4507
	MARS	E.	54 13 13	2946	52 41 53	2936	51 10 20	2926	49 38 34	2916
31	SUN	W.	106 5 9	3237	107 30 34	3222	108 56 17	3208	110 22 17	3192
	Spica	W.	62 41 40	2880	64 14 25	2866	65 47 28	2852	67 20 49	2838
	MARS	E.	41 56 14	2857	40 23 0	2845	38 49 30	2831	37 15 42	2818
	α Aquilæ	E.	47 6 47	4870	46 8 8	4969	45 10 48	5076	44 14 52	5198

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Thur.	1	10 44 8.33	9.061	N. 8 1 34.7	−54.68	15 53.81	64.38	0 18.11	0.793
Frid.	2	10 47 45.64	9.049	7 39 38.5	54.99	15 54.05	64.34	0 37.31	0.805
Sat.	3	10 51 22.66	9.037	7 17 35.0	55.29	15 54.29	64.30	0 56.79	0.817
SUN.	4	10 54 59.42	9.027	6 55 24.5	−55.58	15 54.53	64.26	1 16.54	0.827
Mon.	5	10 58 35.94	9.017	6 33 7.3	55.85	15 54.78	64.23	1 36.52	0.837
Tues.	6	11 2 12.24	9.009	6 10 43.7	56.11	15 55.02	64.20	1 56.72	0.845
Wed.	7	11 5 48.35	9.001	5 48 13.9	−56.37	15 55.27	64.18	2 17.10	0.853
Thur.	8	11 9 24.29	8.995	5 25 38.3	56.61	15 55.51	64.15	2 37.65	0.859
Frid.	9	11 13 0.07	8.989	5 2 57.2	56.82	15 55.76	64.13	2 58.36	0.865
Sat.	10	11 16 35.73	8.984	4 40 10.9	−57.03	15 56.00	64.11	3 19.21	0.870
SUN.	11	11 20 11 28	8.980	4 17 19.7	57.23	15 56.25	64.09	3 40.16	0.874
Mon.	12	11 23 46.74	8.977	3 54 23.9	57.41	15 56.50	64.07	4 1.20	0.877
Tues.	13	11 27 22.13	8.974	3 31 23.8	−57.58	15 56.75	64.06	4 22.29	0.880
Wed.	14	11 30 57.49	8.973	3 8 19.7	57.74	15 57.00	64.05	4 43.42	0.881
Thur.	15	11 34 32.82	8.972	2 45 12.0	57.88	15 57.26	64.05	5 4.59	0.882
Frid.	16	11 38 8.14	8.973	2 22 1.0	−58.01	15 57.52	64.05	5 25.78	0.881
Sat.	17	11 41 43.47	8.973	1 58 47.0	58.13	15 57.78	64.05	5 46.94	0.881
SUN.	18	11 45 18.84	8.975	1 35 30.3	58.24	15 58.04	64.06	6 8.07	0.879
Mon.	19	11 48 54.25	8.977	1 12 11.3	−58.33	15 58.30	64.07	6 29.16	0.877
Tues.	20	11 52 29.73	8.980	0 48 50.4	58.40	15 58.57	64.08	6 50.18	0.874
Wed.	21	11 56 5.29	8.984	0 25 28.0	58.46	15 58.84	64.09	7 11.11	0.870
Thur.	22	11 59 40.96	8.988	N. 0 2 4.5	−58.50	15 59.11	64.10	7 31.93	0.865
Frid.	23	12 3 16.74	8.994	S. 0 21 19.9	58.52	15 59.38	64.12	7 52.64	0.860
Sat.	24	12 6 52.65	9.000	0 44 44.8	58.53	15 59.66	64.14	8 13.23	0.854
SUN.	25	12 10 28.70	9.006	1 8 9.8	−58.52	15 59.94	64.17	8 33.67	0.847
Mon.	26	12 14 4.93	9.014	1 31 34.4	58.50	16 0.22	64.20	8 53.95	0.840
Tues.	27	12 17 41.35	9.022	1 54 58.4	58.48	16 0.50	64.23	9 14.03	0.832
Wed.	28	12 21 17.98	9.031	2 18 21.4	−58.43	16 0.78	64.26	9 33.90	0.823
Thur.	29	12 24 54.84	9.041	2 41 42.9	58.36	16 1.06	64.30	9 53.54	0.813
Frid.	30	12 28 31.94	9.052	3 5 2.7	58.28	16 1.34	64.34	10 12.93	0.802
Sat.	31	12 32 9.31	9.063	S. 3 28 20.4	−58.18	16 1.63	64.38	10 32.07	0.791

Note.—The mean time of semidiameter passing may be found by subtracting 0ˢ.18 from the sidereal time. The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing; south declinations, increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Thur.	1	10 44 8.38	9.063	N. 8 1 34.3	−54.69	0 18.11	0.793	10 44 26.49
Frid.	2	10 47 45.73	9.051	7 39 37.8	55.00	0 37.31	0.805	10 48 23.05
Sat.	3	10 51 22.80	9.039	7 17 34.0	55.30	0 56.80	0.817	10 52 19.60
SUN.	4	10 54 59.61	9.029	6 55 23.2	−55.59	1 16.55	0.827	10 56 16.16
Mon.	5	10 58 36.18	9.019	6 33 5.7	55.86	1 36.54	0.837	11 0 12.71
Tues.	6	11 2 12.53	9.011	6 10 41.8	56.12	1 56.74	0.845	11 4 9.27
Wed.	7	11 5 48.69	9.003	5 48 11.7	−56.38	2 17.13	0.853	11 8 5.82
Thur.	8	11 9 24.68	8.997	5 25 35.8	56.62	2 37.69	0.859	11 12 2.37
Frid.	9	11 13 0.52	8.991	5 2 54.4	56.83	2 58.40	0.865	11 15 58.92
Sat.	10	11 16 36.23	8.986	4 40 7.8	−57.04	3 19.25	0.870	11 19 55.48
SUN.	11	11 20 11.83	8.982	4 17 16.3	57.25	3 40.21	0.874	11 23 52.03
Mon.	12	11 23 47.34	8.979	3 54 20.1	57.43	4 1.25	0.877	11 27 48.59
Tues.	13	11 27 22.79	8.976	3 31 19.6	−57.60	4 22.35	0.880	11 31 45.14
Wed.	14	11 30 58.20	8.975	3 8 15.2	57.76	4 43.49	0.881	11 35 41.69
Thur.	15	11 34 33.58	8.974	2 45 7.2	57.90	5 4.66	0.882	11 39 38.24
Frid.	16	11 38 8.95	8.975	2 21 55.8	−58.03	5 25.85	0.882	11 43 34.80
Sat.	17	11 41 44.34	8.976	1 58 41.4	58.15	5 47.02	0.881	11 47 31.35
SUN.	18	11 45 19.76	8.977	1 35 24.4	58.26	6 8.15	0.879	11 51 27.91
Mon.	19	11 48 55.22	8.979	1 12 5.1	−58.35	6 29.24	0.877	11 55 24.46
Tues.	20	11 52 30.75	8.982	0 48 43.8	58.42	6 50.27	0.874	11 59 21.01
Wed.	21	11 56 6.37	8.986	0 25 21.0	58.48	7 11.20	0.870	12 3 17.56
Thur.	22	11 59 42.09	8.991	N. 0 1 57.1	−58.52	7 32.03	0.865	12 7 14.12
Frid.	23	12 3 17.92	8.996	S. 0 21 27.7	58.54	7 52.75	0.860	12 11 10.67
Sat.	24	12 6 53.88	9.002	0 44 52.9	58.55	8 13.35	0.854	12 15 7.23
SUN.	25	12 10 29.99	9.008	1 8 18.2	−58.54	8 33.79	0.847	12 19 3.78
Mon.	26	12 14 6.27	9.016	1 31 43.1	58.52	8 54.07	0.840	12 23 0.34
Tues.	27	12 17 42.74	9.024	1 55 7.4	58.50	9 14.15	0.832	12 26 56.89
Wed.	28	12 21 19.42	9.033	2 18 30.7	−58.45	9 34.02	0.823	12 30 53.44
Thur.	29	12 24 56.33	9.043	2 41 52.5	58.38	9 53.66	0.813	12 34 49.99
Frid.	30	12 28 33.48	9.054	3 5 12.6	58.30	10 13.06	0.802	12 38 46.55
Sat.	31	12 32 10.90	9.065	S. 3 28 30.6	−58.19	10 32.20	0.791	12 42 43.10

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing; south declinations, increasing.

Diff. for 1 Hour, +9^{s}.8565. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	245	159 28 11.2	27 47.9	145.29	– 0.32	0.0037124	–45.2	13 13 23.18
2	246	160 26 19.0	25 55.6	145.35	0.38	0.0036035	45.5	13 9 27.27
3	247	161 24 28.2	24 4.7	145.41	0.41	0.0034939	45.8	13 5 31.36
4	248	162 22 39.0	22 15.4	145.48	– 0.40	0.0033837	–46.0	13 1 35.45
5	249	163 20 51.4	20 27.7	145.55	0.37	0.0032731	46.2	12 57 39.54
6	250	164 19 5.5	18 41.7	145.62	0.31	0.0031620	46.4	12 53 43.63
7	251	165 17 21.3	16 57.4	145.69	– 0.23	0.0030505	–46.6	12 49 47.72
8	252	166 15 39.0	15 14.9	145.77	– 0.12	0.0029386	46.7	12 45 51.82
9	253	167 13 58.7	13 34.5	145.85	0.00	0.0028264	46.8	12 41 55.91
10	254	168 12 20.4	11 56.1	145.93	+ 0.13	0.0027138	–47.0	12 38 0.00
11	255	169 10 44.2	10 19.8	146.02	0.27	0.0026008	47.2	12 34 4.10
12	256	170 9 10.1	8 45.6	146.11	0.40	0.0024874	47.4	12 30 8.19
13	257	171 7 38.1	7 13.5	146.20	+ 0.52	0.0023734	–47.7	12 26 12.28
14	258	172 6 8.2	5 43.5	146.30	0.62	0.0022587	48.0	12 22 16.37
15	259	173 4 40.5	4 15.7	146.40	0.69	0.0021432	48.3	12 18 20.46
16	260	174 3 15.1	2 50.2	146.49	+ 0.73	0.0020268	–48.7	12 14 24.56
17	261	175 1 51.9	1 26.9	146.58	0.75	0.0019095	49.1	12 10 28.65
18	262	176 0 30.8	0 5.6	146.67	0.74	0.0017912	49.5	12 6 32.74
19	263	176 59 11.8	58 46.5	146.75	+ 0.69	0.0016718	–50.0	12 2 36.84
20	264	177 57 54.9	57 29.5	146.84	0.62	0.0015513	50.4	11 58 40.93
21	265	178 56 40.1	56 14.6	146.92	0.52	0.0014296	50.9	11 54 45.02
22	266	179 55 27.3	55 1.7	147.00	+ 0.40	0.0013068	–51.4	11 50 49.11
23	267	180 54 16.4	53 50.7	147.08	0.28	0.0011830	51.8	11 46 53.21
24	268	181 53 7.3	52 41.5	147.16	0.15	0.0010582	52.2	11 42 57.30
25	269	182 52 0.1	51 34.2	147.24	+ 0.02	0.0009325	–52.5	11 39 1.39
26	270	183 50 54.7	50 28.7	147.32	– 0.11	0.0008062	52.8	11 35 5.48
27	271	184 49 51.1	49 25.0	147.39	0.22	0.0006793	53.0	11 31 9.57
28	272	185 48 49.2	48 22.9	147.47	– 0.31	0.0005519	–53.1	11 27 13.67
29	273	186 47 49.0	47 22.6	147.54	0.37	0.0004242	53.2	11 23 17.76
30	274	187 46 50.6	46 24.1	147.61	0.40	0.0002965	53.2	11 19 21.85
31	275	188 45 54.0	45 27.4	147.68	– 0.40	0.0001688	–53.2	11 15 25.95

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 1$^{\mathrm{d}}$.0.

Diff. for 1 Hour,
—9$^{\mathrm{s}}$.8296.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 13.8	15 19.9	55 47.1	+1.78	56 9.3	+1.91	7 38.3	2.29	10.0
2	15 26.3	15 33.1	56 33.0	2.02	56 57.8	2.11	8 34.2	2.33	11.0
3	15 40.1	15 47.1	57 23.5	2.15	57 49.4	2.15	9 30.4	2.33	12.0
4	15 54.1	16 0.9	58 15.1	+2.11	58 39.9	+2.01	10 25.6	2.26	13.0
5	16 7.2	16 13.1	59 3.3	1.87	59 24.8	1.69	11 19.1	2.18	14.0
6	16 18.3	16 22.7	59 43.8	1.46	59 59.8	1.20	12 10.7	2.12	15.0
7	16 26.1	16 28.6	60 12.5	+0.91	60 21.6	+0.60	13 1.2	2.09	16.0
8	16 30.0	16 30.4	60 26.9	+0.29	60 28.4	−0.03	13 51.5	2.10	17.0
9	16 29.8	16 28.4	60 26.3	−0.32	60 20.8	0.59	14 42.9	2.17	18.0
10	16 26.0	16 22.9	60 12.2	−0.84	60 0.8	−1.05	15 36.4	2.27	19.0
11	16 19.2	16 15.0	59 47.1	1.22	59 31.6	1.35	16 32.5	2.38	20.0
12	16 10.4	16 5.5	59 14.8	1.45	58 56.9	1.52	17 31.1	2.47	21.0
13	16 0.5	15 55.3	58 38.4	−1.56	58 19.5	−1.57	18 31.0	2.48	22.0
14	15 50.2	15 45.1	58 0.7	1.56	57 42.1	1.54	19 30.1	2.41	23.0
15	15 40.2	15 35.3	57 23.8	1.51	57 6.0	1.46	20 26.7	2.27	24.0
16	15 30.6	15 26.1	56 48.8	−1.41	56 32.2	−1.36	21 19.5	2.11	25.0
17	15 21.8	15 17.6	56 16.3	1.30	56 1.1	1.25	22 8.2	1.95	26.0
18	15 13.7	15 9.9	55 46.5	1.19	55 32.7	1.13	22 53.3	1.81	27.0
19	15 6.3	15 2.9	55 19.5	−1.07	55 7.1	−1.00	23 35.6	1.72	28.0
20	14 59.8	14 56.9	54 55.5	0.94	54 44.8	0.86	δ		29.0
21	14 54.2	14 51.8	54 35.0	0.78	54 26.2	0.69	0 16.2	1.68	0.5
22	14 49.7	14 48.0	54 18.5	−0.59	54 12.1	−0.48	0 56.1	1.65	1.5
23	14 46.6	14 45.6	54 7.1	0.36	54 3.6	−0.23	1 36.2	1.68	2.5
24	14 45.1	14 45.1	54 1.7	−0.08	54 1.7	+0.08	2 17.6	1.76	3.5
25	14 45.6	14 46.7	54 3.6	+0.25	54 7.6	+0.43	3 1.0	1.86	4.5
26	14 48.4	14 50.7	54 13.8	0.62	54 22.3	0.81	3 47.0	1.98	5.5
27	14 53.7	14 57.3	54 33.2	1.01	54 46.5	1.21	4 36.1	2.10	6.5
28	15 1.6	15 6.5	55 2.2	+1.41	55 20.3	+1.61	5 28.0	2.21	7.5
29	15 12.1	15 18.3	55 40.8	1.80	56 3.4	1.97	6 22.0	2.27	8.5
30	15 24.9	15 32.1	56 27.9	2.11	56 54.1	2.25	7 16.8	2.28	9.5
31	15 39.6	15 47.3	57 21.7	+2.34	57 50.1	+2.39	8 11.2	2.34	10.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	18 5 58.70	2.3519	S.27 26 4.1	1.415
1	18 8 19.92	2.3555	27 27 24.6	1.268
2	18 10 41.36	2.3591	27 28 36.2	1.120
3	18 13 3.01	2.3625	27 29 39.0	0.972
4	18 15 24.86	2.3658	27 30 32.8	0.823
5	18 17 46.90	2.3690	27 31 17.7	0.673
6	18 20 9.14	2.3722	27 31 53.6	0.523
7	18 22 31.56	2.3753	27 32 20.5	0.373
8	18 24 54.17	2.3783	27 32 38.3	0.221
9	18 27 16.96	2.3812	27 32 47.0	− 0.068
10	18 29 39.92	2.3841	27 32 46.5	+ 0.084
11	18 32 3.05	2.3867	27 32 36.9	0.237
12	18 34 26.33	2.3893	27 32 18.1	0.390
13	18 36 49.77	2.3919	27 31 50.1	0.544
14	18 39 13.36	2.3943	27 31 12.8	0.699
15	18 41 37.09	2.3967	27 30 26.2	0.854
16	18 44 0.96	2.3990	27 29 30.3	1.010
17	18 46 24.97	2.4012	27 28 25.0	1.166
18	18 48 49.11	2.4033	27 27 10.4	1.322
19	18 51 13.37	2.4052	27 25 46.4	1.479
20	18 53 37.74	2.4071	27 24 13.0	1.636
21	18 56 2.22	2.4088	27 22 30.1	1.793
22	18 58 26.80	2.4105	27 20 37.8	1.951
23	19 0 51.48	2.4121	S.27 18 36.0	2.108

FRIDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	19 3 16.25	2.4135	S.27 16 24.8	2.266
1	19 5 41.10	2.4149	27 14 4.1	2.425
2	19 8 6.04	2.4162	27 11 33.8	2.584
3	19 10 31.05	2.4174	27 8 54.0	2.743
4	19 12 56.13	2.4185	27 6 4.7	2.902
5	19 15 21.27	2.4194	27 3 5.8	3.062
6	19 17 46.46	2.4203	26 59 57.3	3.221
7	19 20 11.70	2.4211	26 56 39.3	3.380
8	19 22 36.99	2.4217	26 53 11.7	3.540
9	19 25 2.31	2.4222	26 49 34.5	3.700
10	19 27 27.66	2.4227	26 45 47.7	3.860
11	19 29 53.04	2.4232	26 41 51.3	4.019
12	19 32 18.45	2.4236	26 37 45.4	4.178
13	19 34 43.87	2.4237	26 33 29.9	4.338
14	19 37 9.29	2.4237	26 29 4.8	4.498
15	19 39 34.71	2.4237	26 24 30.1	4.658
16	19 42 0.13	2.4236	26 19 45.8	4.817
17	19 44 25.54	2.4233	26 14 52.0	4.977
18	19 46 50.93	2.4230	26 9 48.6	5.136
19	19 49 16.30	2.4227	26 4 35.7	5.295
20	19 51 41.65	2.4222	25 59 13.2	5.454
21	19 54 6.96	2.4216	25 53 41.2	5.612
22	19 56 32.24	2.4210	25 47 59.7	5.771
23	19 58 57.48	2.4202	25 42 8.7	5.929
24	20 1 22.66	2.4193	S.25 36 8.2	6.087

SATURDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 1 22.66	2.4193	S.25 36 8.2	6.087
1	20 3 47.79	2.4183	25 29 58.3	6.244
2	20 6 12.86	2.4173	25 23 38.9	6.401
3	20 8 37.87	2.4162	25 17 10.1	6.558
4	20 11 2.81	2.4150	25 10 31.9	6.714
5	20 13 27.67	2.4138	25 3 44.4	6.870
6	20 15 52.46	2.4125	24 56 47.5	7.026
7	20 18 17.17	2.4110	24 49 41.3	7.181
8	20 20 41.78	2.4094	24 42 25.8	7.335
9	20 23 6.30	2.4079	24 35 1.1	7.489
10	20 25 30.73	2.4062	24 27 27.1	7.643
11	20 27 55.05	2.4045	24 19 43.9	7.796
12	20 30 19.27	2.4027	24 11 51.6	7.948
13	20 32 43.38	2.4008	24 3 50.2	8.099
14	20 35 7.37	2.3988	23 55 39.7	8.251
15	20 37 31.24	2.3968	23 47 20.1	8.402
16	20 39 54.99	2.3948	23 38 51.5	8.551
17	20 42 18.62	2.3927	23 30 14.0	8.700
18	20 44 42.12	2.3905	23 21 27.5	8.848
19	20 47 5.48	2.3882	23 12 32.2	8.995
20	20 49 28.71	2.3860	23 3 28.1	9.142
21	20 51 51.80	2.3837	22 54 15.1	9.289
22	20 54 14.75	2.3812	22 44 53.4	9.4.4
23	20 56 37.55	2.3787	S.22 35 23.1	9.578

SUNDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	20 59 0.20	2.3762	S.22 25 44.1	9.722
1	21 1 22.70	2.3737	22 15 56.5	9.864
2	21 3 45.05	2.3712	22 6 0.4	10.006
3	21 6 7.24	2.3685	21 55 55.8	10.147
4	21 8 29.27	2.3658	21 45 42.8	10.287
5	21 10 51.14	2.3631	21 35 21.4	10.425
6	21 13 12.85	2.3604	21 24 51.8	10.563
7	21 15 34.39	2.3576	21 14 13.9	10.700
8	21 17 55.76	2.3548	21 3 27.8	10.837
9	21 20 16.97	2.3520	20 52 33.5	10.972
10	21 22 38.00	2.3491	20 41 31.2	11.105
11	21 24 58.86	2.3462	20 30 20.9	11.237
12	21 27 19.54	2.3432	20 19 2.7	11.369
13	21 29 40.05	2.3403	20 7 36.6	11.500
14	21 32 0.38	2.3373	19 56 2.7	11.629
15	21 34 20.53	2.3343	19 44 21.1	11.757
16	21 36 40.50	2.3314	19 32 31.9	11.884
17	21 39 0.30	2.3285	19 20 35.1	12.010
18	21 41 19.92	2.3255	19 8 30.7	12.135
19	21 43 39.36	2.3224	18 56 18.9	12.258
20	21 45 58.61	2.3193	18 43 59.8	12.380
21	21 48 17.68	2.3163	18 31 33.3	12.502
22	21 50 36.57	2.3133	18 18 59.6	12.621
23	21 52 55.28	2.3103	18 6 18.8	12.739
24	21 55 13.81	2.3073	S.17 53 30.9	12.857

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 5.					WEDNESDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	21 55 13.81	2.3073	S. 17 53 30.9	12.857	0	23 42 54.88	2.1952	S. 5 49 25.2	16.702
1	21 57 32.16	2.3042	17 40 36.0	12.972	1	23 45 6.56	2.1942	5 32 41.9	16.741
2	21 59 50.32	2.3012	17 27 34.2	13.086	2	23 47 18.18	2.1932	5 15 56.3	16.778
3	22 2 8.30	2.2982	17 14 25.7	13.199	3	23 49 29.74	2.1922	4 59 8.5	16.814
4	22 4 26.10	2.2952	17 1 10.4	13.311	4	23 51 41.24	2.1913	4 42 18.6	16.848
5	22 6 43.72	2.2922	16 47 48.4	13.422	5	23 53 52.69	2.1905	4 25 26.7	16.881
6	22 9 1.16	2.2892	16 34 19.8	13.531	6	23 56 4.10	2.1897	4 8 32.9	16.911
7	22 11 18.42	2.2862	16 20 44.7	13.638	7	23 58 15.46	2.1891	3 51 37.4	16.939
8	22 13 35.50	2.2832	16 7 3.2	13.743	8	0 0 26.79	2.1885	3 34 40.2	16.967
9	22 15 52.41	2.2803	15 53 15.5	13.848	9	0 2 38.08	2.1879	3 17 41.4	16.992
10	22 18 9.14	2.2774	15 39 21.5	13.952	10	0 4 49.34	2.1874	3 0 41.2	17.015
11	22 20 25.70	2.2745	15 25 21.3	14.053	11	0 7 0.57	2.1870	2 43 39.6	17.037
12	22 22 42.08	2.2716	15 11 15.1	14.153	12	0 9 11.78	2.1867	2 26 36.8	17.056
13	22 24 58.29	2.2687	14 57 2.9	14.252	13	0 11 22.97	2.1864	2 9 32.9	17.073
14	22 27 14.33	2.2659	14 42 44.8	14.350	14	0 13 34.15	2.1862	1 52 28.0	17.089
15	22 29 30.20	2.2632	14 28 20.9	14.446	15	0 15 45.32	2.1862	1 35 22.2	17.103
16	22 31 45.91	2.2604	14 13 51.3	14.540	16	0 17 56.49	2.1862	1 18 15.6	17.116
17	22 34 1.45	2.2576	13 59 16.1	14.632	17	0 20 7.66	2.1862	1 1 8.3	17.127
18	22 36 16.82	2.2548	13 44 35.4	14.723	18	0 22 18.83	2.1863	0 44 0.4	17.136
19	22 38 32.03	2.2522	13 29 49.3	14.813	19	0 24 30.01	2.1865	0 26 52.0	17.142
20	22 40 47.09	2.2496	13 14 57.8	14.902	20	0 26 41.21	2.1868	S. 0 9 43.3	17.147
21	22 43 1.99	2.2470	13 0 1.1	14.988	21	0 28 52.43	2.1872	N. 0 7 25.6	17.150
22	22 45 16.73	2.2444	12 44 59.2	15.073	22	0 31 3.67	2.1875	0 24 34.7	17.152
23	22 47 31.32	2.2419	S. 12 29 52.3	15.157	23	0 33 14.93	2.1879	N. 0 41 43.8	17.151
	TUESDAY 6.					THURSDAY 8.			
0	22 49 45.76	2.2394	S. 12 14 40.4	15.238	0	0 35 26.22	2.1885	N. 0 58 52.8	17.149
1	22 52 0.05	2.2370	11 59 23.7	15.318	1	0 37 37.55	2.1892	1 16 1.7	17.145
2	22 54 14.20	2.2347	11 44 2.2	15.397	2	0 39 48.92	2.1899	1 33 10.2	17.138
3	22 56 28.21	2.2323	11 28 36.0	15.475	3	0 42 0.34	2.1907	1 50 18.3	17.131
4	22 58 42.08	2.2300	11 13 5.2	15.550	4	0 44 11.81	2.1916	2 7 25.9	17.122
5	23 0 55.81	2.2277	10 57 30.0	15.623	5	0 46 23.33	2.1925	2 24 32.9	17.110
6	23 3 9.40	2.2254	10 41 50.4	15.696	6	0 48 34.91	2.1935	2 41 39.1	17.097
7	23 5 22.86	2.2233	10 26 6.5	15.766	7	0 50 46.55	2.1946	2 58 44.5	17.082
8	23 7 36.20	2.2212	10 10 18.5	15.834	8	0 52 58.26	2.1958	3 15 49.0	17.065
9	23 9 49.41	2.2192	9 54 26.4	15.902	9	0 55 10.05	2.1971	3 32 52.3	17.045
10	23 12 2.50	2.2172	9 38 30.3	15.967	10	0 57 21.91	2.1984	3 49 54.4	17.025
11	23 14 15.47	2.2153	9 22 30.3	16.031	11	0 59 33.85	2.1997	4 6 55.3	17.003
12	23 16 28.33	2.2134	9 6 26.6	16.093	12	1 1 45.88	2.2012	4 23 54.8	16.979
13	23 18 41.08	2.2115	8 50 19.2	16.153	13	1 3 58.00	2.2028	4 40 52.8	16.952
14	23 20 53.71	2.2097	8 34 8.2	16.212	14	1 6 10.22	2.2044	4 57 49.1	16.924
15	23 23 6.24	2.2080	8 17 53.8	16.268	15	1 8 22.53	2.2060	5 14 43.7	16.895
16	23 25 18.67	2.2063	8 1 36.0	16.324	16	1 10 34.94	2.2078	5 31 36.5	16.863
17	23 27 31.00	2.2047	7 45 14.9	16.377	17	1 12 47.46	2.2097	5 48 27.3	16.829
18	23 29 43.23	2.2031	7 28 50.7	16.429	18	1 15 0.10	2.2117	6 5 16.0	16.794
19	23 31 55.37	2.2017	7 12 23.4	16.479	19	1 17 12.86	2.2136	6 22 2.6	16.757
20	23 34 7.43	2.2003	6 55 53.2	16.527	20	1 19 25.73	2.2155	6 38 46.9	16.718
21	23 36 19.41	2.1990	6 39 20.2	16.573	21	1 21 38.72	2.2176	6 55 28.8	16.677
22	23 38 31.31	2.1977	6 22 44.5	16.618	22	1 23 51.84	2.2198	7 12 8.2	16.635
23	23 40 43.13	2.1964	6 6 6.1	16.661	23	1 26 5.10	2.2221	7 28 45.0	16.591
24	23 42 54.88	2.1952	S. 5 49 25.2	16.702	24	1 28 18.50	2.2245	N. 7 45 19.1	16.545

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 28 18.50	2.2245	N. 7 45 19.1	16.545
1	1 30 32.04	2.2269	8 1 50.4	16.497
2	1 32 45.73	2.2293	8 18 18.7	16.447
3	1 34 59.56	2.2318	8 34 44.0	16.395
4	1 37 13.55	2.2345	8 51 6.1	16.342
5	1 39 27.70	2.2372	9 7 25.0	16.287
6	1 41 42.01	2.2399	9 23 40.5	16.229
7	1 43 56.48	2.2427	9 39 52.5	16.171
8	1 46 11.13	2.2456	9 56 1.0	16.110
9	1 48 25.95	2.2484	10 12 5.7	16.047
10	1 50 40.94	2.2514	10 28 6.6	15.983
11	1 52 56.12	2.2545	10 44 3.7	15.918
12	1 55 11.48	2.2576	10 59 56.8	15.851
13	1 57 27.03	2.2608	11 15 45.8	15.781
14	1 59 42.77	2.2640	11 31 30.5	15.709
15	2 1 58.71	2.2672	11 47 10.9	15.637
16	2 4 14.84	2.2706	12 2 46.9	15.563
17	2 6 31.18	2.2740	12 18 18.3	15.485
18	2 8 47.72	2.2774	12 33 45.1	15.407
19	2 11 4.47	2.2809	12 49 7.2	15.327
20	2 13 21.43	2.2845	13 4 24.4	15.246
21	2 15 38.61	2.2881	13 19 36.7	15.162
22	2 17 56.00	2.2918	13 34 43.9	15.077
23	2 20 13.62	2.2955	N.13 49 46.0	14.991

SATURDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 22 31.46	2.2992	N.14 4 42.8	14.902
1	2 24 49.53	2.3030	14 19 34.2	14.812
2	2 27 7.82	2.3068	14 34 20.2	14.720
3	2 29 26.34	2.3107	14 49 0.6	14.626
4	2 31 45.10	2.3146	15 3 35.3	14.531
5	2 34 4.09	2.3185	15 18 4.3	14.434
6	2 36 23.32	2.3225	15 32 27.4	14.335
7	2 38 42.79	2.3265	15 46 44.5	14.235
8	2 41 2.50	2.3306	16 0 55.6	14.133
9	2 43 22.46	2.3347	16 15 0.5	14.029
10	2 45 42.66	2.3388	16 28 59.1	13.924
11	2 48 3.11	2.3429	16 42 51.4	13.817
12	2 50 23.81	2.3471	16 56 37.2	13.708
13	2 52 44.76	2.3513	17 10 16.4	13.598
14	2 55 5.96	2.3555	17 23 49.0	13.487
15	2 57 27.42	2.3597	17 37 14.9	13.374
16	2 59 49.13	2.3639	17 50 33.9	13.259
17	3 2 11.09	2.3682	18 3 46.0	13.143
18	3 4 33.31	2.3725	18 16 51.1	13.026
19	3 6 55.79	2.3768	18 29 49.1	12.906
20	3 9 18.53	2.3811	18 42 39.8	12.784
21	3 11 41.52	2.3854	18 55 23.2	12.662
22	3 14 4.78	2.3897	19 7 59.2	12.538
23	3 16 28.29	2.3940	19 20 27.8	12.413
24	3 18 52.06	2.3983	N.19 32 48.8	12.287

SUNDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
	h m s	s	° ′ ″	″
0	3 18 52.06	2.3983	N.19 32 48.8	12.287
1	3 21 16.09	2.4027	19 45 2.2	12.158
2	3 23 40.38	2.4070	19 57 7.8	12.027
3	3 26 4.93	2.4112	20 9 5.5	11.896
4	3 28 29.73	2.4155	20 20 55.3	11.764
5	3 30 54.79	2.4198	20 32 37.2	11.631
6	3 33 20.11	2.4241	20 44 11.0	11.495
7	3 35 45.68	2.4283	20 55 36.6	11.358
8	3 38 11.50	2.4325	21 6 54.0	11.220
9	3 40 37.58	2.4367	21 18 3.0	11.080
10	3 43 3.91	2.4409	21 29 3.6	10.939
11	3 45 30.49	2.4451	21 39 55.7	10.798
12	3 47 57.32	2.4492	21 50 39.3	10.655
13	3 50 24.40	2.4533	22 1 14.3	10.510
14	3 52 51.72	2.4573	22 11 40.5	10.363
15	3 55 19.28	2.4613	22 21 57.9	10.216
16	3 57 47.08	2.4653	22 32 6.4	10.067
17	4 0 15.12	2.4693	22 42 6.0	9.918
18	4 2 43.39	2.4732	22 51 56.6	9.767
19	4 5 11.90	2.4770	23 1 38.1	9.616
20	4 7 40.63	2.4808	23 11 10.5	9.462
21	4 10 9.59	2.4846	23 20 33.6	9.308
22	4 12 38.78	2.4882	23 29 47.4	9.153
23	4 15 8.18	2.4918	N.23 38 51.9	8.997

MONDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
0	4 17 37.80	2.4954	N.23 47 47.0	8.839
1	4 20 7.63	2.4989	23 56 32.6	8.681
2	4 22 37.67	2.5023	24 5 8.7	8.522
3	4 25 7.91	2.5057	24 13 35.2	8.362
4	4 27 38.35	2.5090	24 21 52.1	8.200
5	4 30 8.99	2.5122	24 29 59.2	8.037
6	4 32 39.82	2.5154	24 37 56.5	7.873
7	4 35 10.84	2.5184	24 45 44.0	7.709
8	4 37 42.03	2.5213	24 53 21.6	7.545
9	4 40 13.40	2.5242	25 0 49.4	7.380
10	4 42 44.94	2.5270	25 8 7.2	7.213
11	4 45 16.64	2.5298	25 15 14.9	7.045
12	4 47 48.51	2.5325	25 22 12.6	6.877
13	4 50 20.54	2.5350	25 29 0.2	6.708
14	4 52 52.71	2.5374	25 35 37.6	6.538
15	4 55 25.02	2.5397	25 42 4.8	6.368
16	4 57 57.47	2.5419	25 48 21.8	6.197
17	5 0 30.05	2.5441	25 54 28.5	6.026
18	5 3 2.76	2.5461	26 0 24.9	5.854
19	5 5 35.58	2.5480	26 6 11.0	5.682
20	5 8 8.52	2.5499	26 11 46.7	5.508
21	5 10 41.57	2.5517	26 17 12.0	5.334
22	5 13 14.72	2.5532	26 22 26.8	5.160
23	5 15 47.96	2.5547	26 27 31.2	4.986
24	5 18 21.28	2.5560	N.26 32 25.1	4.811

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	5 18 21.28	2.5560	N.26 32 25.1	4.811
1	5 20 54.68	2.5572	26 37 8.5	4.636
2	5 23 28.15	2.5584	26 41 41.4	4.460
3	5 26 1.69	2.5594	26 46 3.7	4.283
4	5 28 35.28	2.5603	26 50 15.4	4.107
5	5 31 8.92	2.5611	26 54 16.5	3.931
6	5 33 42.61	2.5617	26 58 7.1	3.754
7	5 36 16.33	2.5622	27 1 47.0	3.577
8	5 38 50.08	2.5626	27 5 16.3	3.399
9	5 41 23.84	2.5628	27 8 34.9	3.222
10	5 43 57.61	2.5629	27 11 42.9	3.045
11	5 46 31.39	2.5630	27 14 40.3	2.867
12	5 49 5.17	2.5628	27 17 27.0	2.690
13	5 51 38.93	2.5626	27 20 3.1	2.512
14	5 54 12.68	2.5622	27 22 28.5	2.334
15	5 56 46.40	2.5617	27 24 43.2	2.157
16	5 59 20.08	2.5610	27 26 47.3	1.980
17	6 1 53.72	2.5602	27 28 40.8	1.802
18	6 4 27.31	2.5593	27 30 23.6	1.625
19	6 7 0.84	2.5583	27 31 55.8	1.448
20	6 9 34.30	2.5571	27 33 17.4	1.272
21	6 12 7.69	2.5557	27 34 28.4	1.095
22	6 14 40.99	2.5543	27 35 28.8	0.919
23	6 17 14.21	2.5528	N.27 36 18.7	0.743

WEDNESDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	6 19 47.33	2.5511	N.27 36 58.0	0.567
1	6 22 20.34	2.5492	27 37 26.8	0.392
2	6 24 53.24	2.5472	27 37 45.1	0.217
3	6 27 26.01	2 5451	27 37 52.8	+ 0.042
4	6 29 58.65	2.5429	27 37 50.1	− 0.132
5	6 32 31.16	2.5407	27 37 37.0	0.306
6	6 35 3.53	2.5382	27 37 13.4	0.480
7	6 37 35.74	2.5355	27 36 39.4	0.652
8	6 40 7.79	2.5328	27 35 55.1	0.823
9	6 42 39.68	2.5300	27 35 0.6	0.994
10	6 45 11.39	2.5270	27 33 55.8	1.165
11	6 47 42.92	2.5238	27 32 40.8	1.336
12	6 50 14.25	2.5206	27 31 15.5	1.506
13	6 52 45.39	2.5173	27 29 40.1	1.674
14	6 55 16.33	2.5139	27 27 54.6	1.843
15	6 57 47.06	2.5103	27 25 59.0	2.011
16	7 0 17.57	2.5067	27 23 53.3	2.178
17	7 2 47.86	2.5028	27 21 37.7	2.343
18	7 5 17.91	2.4988	27 19 12.2	2.508
19	7 7 47.72	2.4948	27 16 36.8	2.673
20	7 10 17.29	2.4908	27 13 51.5	2.836
21	7 12 46.62	2.4867	27 10 56.5	2.998
22	7 15 15.69	2.4823	27 7 51.8	3.159
23	7 17 44.50	2.4778	27 4 37.4	3.321
24	7 20 13.03	2.4733	N.27 1 13.3	3.482

THURSDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	7 20 13.03	2.4733	N.27 1 13.3	3.482
1	7 22 41.29	2.4687	26 57 39.6	3.640
2	7 25 9.27	2.4640	26 53 56.5	3.797
3	7 27 36.97	2.4592	26 50 4.0	3.954
4	7 30 4.38	2.4543	26 46 2.1	4.110
5	7 32 31.49	2.4493	26 41 50.8	4.265
6	7 34 58.30	2.4443	26 37 30.3	4.419
7	7 37 24.81	2.4391	26 33 0.6	4.572
8	7 39 51.00	2.4339	26 28 21.7	4.723
9	7 42 16.88	2.4287	26 23 33.8	4.873
10	7 44 42.44	2.4233	26 18 36.9	5.023
11	7 47 7.67	2.4178	26 13 31.0	5.172
12	7 49 32.57	2.4123	26 8 16.3	5.319
13	7 51 57.14	2.4067	26 2 52.8	5.465
14	7 54 21.37	2.4010	25 57 20.5	5.610
15	7 56 45.26	2.3953	25 51 39.6	5.753
16	7 59 8.81	2.3896	25 45 50.1	5.896
17	8 1 32.01	2.3837	25 39 52.1	6.037
18	8 3 54.86	2.3778	25 33 45.6	6.177
19	8 6 17.35	2.3719	25 27 30.8	6.316
20	8 8 39.49	2.3660	25 21 7.7	6.454
21	8 11 1.27	2.3599	25 14 36.3	6.591
22	8 13 22 68	2.3538	25 7 56.8	6.725
23	8 15 43.73	2.3477	N.25 1 9.3	6.859

FRIDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	8 18 4.41	2.3416	N.24 54 13.7	6.992
1	8 20 24.72	2.3354	24 47 10.2	7.123
2	8 22 44.66	2 3291	24 39 58.9	7.253
3	8 25 4.22	2.3228	24 32 39.8	7.382
4	8 27 23.40	2.3165	24 25 13.0	7.510
5	8 29 42.20	2.3102	24 17 38.6	7.636
6	8 32 0.63	2.3039	24 9 56.7	7.761
7	8 34 18.67	2.2975	24 2 7.3	7.885
8	8 36 36.33	2.2911	23 54 10.5	8.007
9	8 38 53.60	2.2847	23 46 6.5	8.127
10	8 41 10.49	2.2782	23 37 55.2	8.247
11	8 43 26.99	2.2718	23 29 36.8	8.366
12	8 45 43.11	2.2654	23 21 11.3	8.483
13	8 47 58.84	2.2589	23 12 38.8	8.599
14	8 50 14.18	2.2524	23 3 59.4	8.712
15	8 52 29.13	2.2459	22 55 13.3	8.825
16	8 54 43.69	2.2394	22 46 20.4	8.937
17	8 56 57.86	2.2330	22 37 20.8	9.048
18	8 59 11.65	2.2266	22 28 14.6	9.157
19	9 1 25.05	2.2201	22 19 1.9	9.265
20	9 3 38.06	2.2136	22 9 42.8	9.372
21	9 5 50.68	2.2071	22 0 17.3	9.477
22	9 8 2.91	2.2007	21 50 45.6	9.580
23	9 10 14.76	2.1942	21 41 7.7	9.682
24	9 12 26.22	2.1877	N.21 31 23.7	9.783

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 17.					**MONDAY 19.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 12 26.22	2.1877	N.21 31 23.7	9.783	0	10 50 38.23	1.9212	N.12 9 38.4	13.156
1	9 14 37.29	2.1813	21 21 33.7	9.883	1	10 52 33.37	1.9169	11 56 27.8	13.197
2	9 16 47.98	2.1750	21 11 37.7	9.982	2	10 54 28.26	1.9127	11 43 14.7	13.238
3	9 18 58.29	2.1687	21 1 35.9	10.079	3	10 56 22.89	1.9085	11 29 59.2	13.277
4	9 21 8.22	2.1623	20 51 28.3	10.175	4	10 58 17.28	1.9045	11 16 41.4	13.316
5	9 23 17.77	2.1559	20 41 14.9	10.270	5	11 0 11.43	1.9004	11 3 21.3	13.353
6	9 25 26.93	2.1495	20 30 55.9	10.362	6	11 2 5.33	1.8963	10 49 59.0	13.389
7	9 27 35.71	2.1433	20 20 31.4	10.454	7	11 3 59.00	1.8925	10 36 34.6	13.425
8	9 29 44.12	2.1371	20 10 1.4	10.545	8	11 5 52.44	1.8887	10 23 8.0	13.461
9	9 31 52.16	2.1308	19 59 26.0	10.634	9	11 7 45.64	1.8849	10 9 39.3	13.495
10	9 33 59.82	2.1246	19 48 45.3	10.722	10	11 9 38.62	1.8812	9 56 8.6	13.527
11	9 36 7.11	2.1184	19 37 59.3	10.809	11	11 11 31.38	1.8775	9 42 36.1	13.557
12	9 38 14.03	2.1123	19 27 8.2	10.894	12	11 13 23.92	1.8739	9 29 1.8	13.587
13	9 40 20.58	2.1062	19 16 12.0	10.978	13	11 15 16.25	1.8704	9 15 25.7	13.617
14	9 42 26.77	2.1001	19 5 10.8	11.061	14	11 17 8.37	1.8670	9 1 47.8	13.646
15	9 44 32.59	2.0940	18 54 4.7	11.142	15	11 19 0.29	1.8637	8 48 8.2	13.673
16	9 46 38.05	2.0880	18 42 53.8	11.222	16	11 20 52.01	1.8603	8 34 27.0	13.699
17	9 48 43.15	2.0820	18 31 38.0	11.302	17	11 22 43.53	1.8570	8 20 44.3	13.724
18	9 50 47.89	2.0760	18 20 17.5	11.380	18	11 24 34.85	1.8538	8 7 0.1	13.748
19	9 52 52.27	2.0702	18 8 52.4	11.456	19	11 26 25.98	1.8507	7 53 14.5	13.772
20	9 54 56.31	2.0644	17 57 22.8	11.531	20	11 28 16.93	1.8477	7 39 27.4	13.796
21	9 57 0.00	2.0586	17 45 48.7	11.605	21	11 30 7.70	1.8447	7 25 39.0	13.817
22	9 59 3.34	2.0528	17 34 10.2	11.678	22	11 31 58.29	1.8417	7 11 49.3	13.838
23	10 1 6.34	2.0471	N.17 22 27.3	11.750	23	11 33 48.71	1.8388	N. 6 57 58.4	13.857
	SUNDAY 18.					**TUESDAY 20.**			
0	10 3 9.00	2.0415	N.17 10 40.2	11.820	0	11 35 38.95	1.8360	N. 6 44 6.4	13.876
1	10 5 11.32	2.0358	16 58 48.9	11.889	1	11 37 29.03	1.8333	6 30 13.3	13.894
2	10 7 13.30	2.0302	16 46 53.5	11.957	2	11 39 18.95	1.8307	6 16 19.1	13.912
3	10 9 14.95	2.0247	16 34 54.1	12.023	3	11 41 8.71	1.8280	6 2 23.9	13.928
4	10 11 16.27	2.0192	16 22 50.7	12.089	4	11 42 58.31	1.8255	5 48 27.8	13.943
5	10 13 17.26	2.0137	16 10 43.4	12.153	5	11 44 47.77	1.8231	5 34 30.8	13.958
6	10 15 17.92	2.0083	15 58 32.3	12.217	6	11 46 37.08	1.8207	5 20 32.9	13.971
7	10 17 18.26	2.0031	15 46 17.4	12.278	7	11 48 26.25	1.8183	5 6 34.3	13.983
8	10 19 18.29	1.9979	15 33 58.9	12.338	8	11 50 15.28	1.8161	4 52 35.0	13.994
9	10 21 18.01	1.9927	15 21 36.8	12.398	9	11 52 4.18	1.8139	4 38 35.0	14.005
10	10 23 17.42	1.9875	15 9 11.1	12.457	10	11 53 52.95	1.8118	4 24 34.4	14.015
11	10 25 16.51	1.9823	14 56 41.9	12.514	11	11 55 41.59	1.8097	4 10 33.2	14.024
12	10 27 15.29	1.9773	14 44 9.4	12.569	12	11 57 30.11	1.8077	3 56 31.5	14.032
13	10 29 13.78	1.9723	14 31 33.6	12.624	13	11 59 18.51	1.8058	3 42 29.4	14.039
14	10 31 11.97	1.9673	14 18 54.5	12.679	14	12 1 6.80	1.8039	3 28 26.8	14.046
15	10 33 9.86	1.9624	14 6 12.1	12.732	15	12 2 54.98	1.8021	3 14 23.9	14.051
16	10 35 7.46	1.9576	13 53 26.6	12.783	16	12 4 43.05	1.8003	3 0 20.7	14.056
17	10 37 4.78	1.9529	13 40 38.1	12.833	17	12 6 31.02	1.7987	2 46 17.2	14.059
18	10 39 1.81	1.9482	13 27 46.6	12.882	18	12 8 18.89	1.7971	2 32 13.6	14.062
19	10 40 58.56	1.9436	13 14 52.2	12.931	19	12 10 6.67	1.7956	2 18 9.8	14.064
20	10 42 55.04	1.9390	13 1 54.9	12.978	20	12 11 54.36	1.7941	2 4 5.9	14.066
21	10 44 51.24	1.9344	12 48 54.8	13.024	21	12 13 41.96	1.7927	1 50 1.9	14.067
22	10 46 47.17	1.9299	12 35 52.0	13.069	22	12 15 29.48	1.7913	1 35 57.9	14.066
23	10 48 42.83	1.9255	12 22 46.5	13.113	23	12 17 16.92	1.7900	1 21 54.0	14.064
24	10 50 38.23	1.9212	N.12 9 38.4	13.156	24	12 19 4.28	1.7888	N. 1 7 50.2	14.062

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 19 4.28	1.7888	N. 1 7 50.2	14.062
1	12 20 51.57	1.7877	0 53 46.5	14.060
2	12 22 38.80	1.7867	0 39 43.0	14.056
3	12 24 25.97	1.7857	0 25 39.8	14.051
4	12 26 13.08	1.7847	N. 0 11 36.9	14.046
5	12 28 0.14	1.7838	S. 0 2 25.7	14.040
6	12 29 47.14	1.7829	0 16 27.9	14.033
7	12 31 34.09	1.7822	0 30 29.7	14.026
8	12 33 21.00	1.7816	0 44 31.0	14.017
9	12 35 7.88	1.7810	0 58 31.7	14.007
10	12 36 54.72	1.7804	1 12 31.8	13.997
11	12 38 41.53	1.7799	1 26 31.3	13.987
12	12 40 28.31	1.7795	1 40 30.2	13.976
13	12 42 15.07	1.7792	1 54 28.4	13.962
14	12 44 1.81	1.7789	2 8 25.7	13.948
15	12 45 48.53	1.7786	2 22 22.2	13.934
16	12 47 35.24	1.7785	2 36 17.8	13.919
17	12 49 21.95	1.7784	2 50 12.5	13.904
18	12 51 8.65	1.7783	3 4 6.3	13.888
19	12 52 55.35	1.7783	3 17 59.1	13.871
20	12 54 42.05	1.7784	3 31 50.8	13.853
21	12 56 28.76	1.7786	3 45 41.4	13.834
22	12 58 15.48	1.7788	3 59 30.9	13.815
23	13 0 2.22	1.7791	S. 4 13 19.2	13.794

THURSDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 1 48.97	1.7794	S. 4 27 6.2	13.773
1	13 3 35.74	1.7798	4 40 52.0	13.752
2	13 5 22.54	1.7803	4 54 36.4	13.729
3	13 7 9.38	1.7809	5 8 19.4	13.705
4	13 8 56.25	1.7815	5 22 1.0	13.681
5	13 10 43.16	1.7821	5 35 41.1	13.657
6	13 12 30.10	1.7828	5 49 19.8	13.632
7	13 14 17.09	1.7836	6 2 56.9	13.605
8	13 16 4.13	1.7845	6 16 32.4	13.577
9	13 17 51.23	1.7854	6 30 6.2	13.549
10	13 19 38.38	1.7863	6 43 38.3	13.521
11	13 21 25.59	1.7873	6 57 8.7	13.492
12	13 23 12.86	1.7884	7 10 37.4	13.462
13	13 25 0.20	1.7896	7 24 4.2	13.431
14	13 26 47.61	1.7908	7 37 29.1	13.399
15	13 28 35.10	1.7921	7 50 52.1	13.367
16	13 30 22.66	1.7934	8 4 13.2	13.334
17	13 32 10.31	1.7948	8 17 32.2	13.300
18	13 33 58.04	1.7962	8 30 49.2	13.266
19	13 35 45.86	1.7978	8 44 4.1	13.230
20	13 37 33.78	1.7994	8 57 16.8	13.194
21	13 39 21.79	1.8010	9 10 27.4	13.157
22	13 41 9.90	1.8027	9 23 35.7	13.119
23	13 42 58.11	1.8044	9 36 41.7	13.081
24	13 44 46.43	1.8063	S. 9 49 45.4	13.042

FRIDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 44 46.43	1.8063	S. 9 49 45.4	13.042
1	13 46 34.86	1.8082	10 2 46.7	13.002
2	13 48 23.41	1.8101	10 15 45.6	12.962
3	13 50 12.07	1.8120	10 28 42.1	12.921
4	13 52 0.85	1.8141	10 41 36.1	12.878
5	13 53 49.76	1.8162	10 54 27.5	12.835
6	13 55 38.79	1.8183	11 7 16.3	12.791
7	13 57 27.95	1.8205	11 20 2.4	12.747
8	13 59 17.25	1.8228	11 32 45.9	12.702
9	14 1 6.69	1.8252	11 45 26.7	12.657
10	14 2 56.27	1.8276	11 58 4.7	12.610
11	14 4 46.00	1.8300	12 10 39.9	12.562
12	14 6 35.87	1.8324	12 23 12.2	12.514
13	14 8 25.89	1.8350	12 35 41.6	12.465
14	14 10 16.07	1.8377	12 48 8.0	12.415
15	14 12 6.41	1.8403	13 0 31.4	12.365
16	14 13 56.91	1.8430	13 12 51.8	12.314
17	14 15 47.57	1.8458	13 25 9.1	12.261
18	14 17 38.40	1.8486	13 37 23.2	12.208
19	14 19 29.40	1.8514	13 49 34.1	12.155
20	14 21 20.57	1.8543	14 1 41.8	12.102
21	14 23 11.92	1.8573	14 13 46.3	12.047
22	14 25 3.45	1.8604	14 25 47.4	11.990
23	14 26 55.17	1.8635	S. 14 37 45.1	11.933

SATURDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 28 47.07	1.8666	S. 14 49 39.4	11.876
1	14 30 39.16	1.8698	15 1 30.2	11.818
2	14 32 31.44	1.8730	15 13 17.5	11.759
3	14 34 23.92	1.8763	15 25 1.3	11.700
4	14 36 16.60	1.8797	15 36 41.5	11.639
5	14 38 9.48	1.8830	15 48 18.0	11.577
6	14 40 2.56	1.8864	15 59 50.7	11.514
7	14 41 55.85	1.8899	16 11 19.7	11.451
8	14 43 49.35	1.8934	16 22 44.9	11.388
9	14 45 43.06	1.8970	16 34 6.3	11.324
10	14 47 36.99	1.9006	16 45 23.8	11.258
11	14 49 31.13	1.9042	16 56 37.3	11.192
12	14 51 25.49	1.9079	17 7 46.9	11.126
13	14 53 20.08	1.9117	17 18 52.4	11.058
14	14 55 14.90	1.9155	17 29 53.8	10.989
15	14 57 9.94	1.9193	17 40 51.1	10.920
16	14 59 5.21	1.9232	17 51 44.2	10.850
17	15 1 0.72	1.9271	18 2 33.1	10.779
18	15 2 56.46	1.9310	18 13 17.7	10.707
19	15 4 52.44	1.9350	18 23 57.9	10.634
20	15 6 48.66	1.9391	18 34 33.8	10.561
21	15 8 45.13	1.9432	18 45 5.3	10.487
22	15 10 41.84	1.9473	18 55 32.3	10.412
23	15 12 38.80	1.9514	19 5 54.7	10.335
24	15 14 36.01	1.9556	S. 19 16 12.5	10.258

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 25.					**TUESDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	15 14 36.01	1.9556	S. 19 16 12.5	10.258	0	16 53 44.18	2.1787	S. 25 44 3.3	5.569
1	15 16 33.47	1.9598	19 26 25.7	10.181	1	16 55 55.04	2.1833	25 49 33.9	5.451
2	15 18 31.19	1.9641	19 36 34.3	10.103	2	16 58 6.18	2.1879	25 54 57.4	5.332
3	15 20 29.16	1.9683	19 46 38.1	10.023	3	17 0 17.59	2.1924	26 0 13.8	5.212
4	15 22 27.38	1.9726	19 56 37.1	9.943	4	17 2 29.27	2.1969	26 5 22.9	5.090
5	15 24 25.87	1.9770	20 6 31.3	9.862	5	17 4 41.22	2.2015	26 10 24.6	4.968
6	15 26 24.62	1.9814	20 16 20.6	9.781	6	17 6 53.45	2.2060	26 15 19.0	4.845
7	15 28 23.64	1.9858	20 26 5.0	9.698	7	17 9 5.94	2.2104	26 20 6.0	4.721
8	15 30 22.92	1.9902	20 35 44.4	9.615	8	17 11 18.69	2.2148	26 24 45.5	4.597
9	15 32 22.46	1.9946	20 45 18.8	9.531	9	17 13 31.71	2.2192	26 29 17.6	4.472
10	15 34 22.27	1.9991	20 54 48.1	9.446	10	17 15 44.99	2.2235	26 33 42.2	4.346
11	15 36 22.36	2.0037	21 4 12.3	9.359	11	17 17 58.53	2.2278	26 37 59.1	4.219
12	15 38 22.72	2.0082	21 13 31.2	9.272	12	17 20 12.32	2.2320	26 42 8.4	4.091
13	15 40 23.35	2.0128	21 22 44.9	9.184	13	17 22 26.37	2.2362	26 46 10.0	3.962
14	15 42 24.26	2.0174	21 31 53.3	9.096	14	17 24 40.67	2.2403	26 50 3.9	3.833
15	15 44 25.44	2.0220	21 40 56.4	9.007	15	17 26 55.21	2.2444	26 53 50.0	3.703
16	15 46 26.90	2.0267	21 49 54.1	8.917	16	17 29 10.00	2.2486	26 57 28.3	3.573
17	15 48 28.64	2.0313	21 58 46.4	8.826	17	17 31 25.04	2.2527	27 0 58.8	3.442
18	15 50 30.66	2.0360	22 7 33.2	8.733	18	17 33 40.32	2.2566	27 4 21.4	3.310
19	15 52 32.96	2.0407	22 16 14.4	8.640	19	17 35 55.83	2.2604	27 7 36.0	3.177
20	15 54 35.54	2.0454	22 24 50.0	8.547	20	17 38 11.57	2.2643	27 10 42.6	3.043
21	15 56 38.41	2.0502	22 33 20.0	8.452	21	17 40 27.55	2.2682	27 13 41.2	2.909
22	15 58 41.56	2.0549	22 41 44.3	8.357	22	17 42 43.75	2.2719	27 16 31.7	2.774
23	16 0 45.00	2.0597	S. 22 50 2.8	8.260	23	17 45 0.17	2.2755	S. 27 19 14.1	2.639
	MONDAY 26.					**WEDNESDAY 28.**			
0	16 2 48.72	2.0644	S. 22 58 15.5	8.163	0	17 47 16.81	2.2792	S. 27 21 48.4	2.503
1	16 4 52.73	2.0692	23 6 22.3	8.065	1	17 49 33.67	2.2828	27 24 14.5	2.366
2	16 6 57.02	2.0739	23 14 23.3	7.967	2	17 51 50.74	2.2863	27 26 32.3	2.227
3	16 9 1.60	2.0787	23 22 18.3	7.867	3	17 54 8.02	2.2898	27 28 41.8	2.089
4	16 11 6.47	2.0835	23 30 7.3	7.766	4	17 56 25.51	2.2931	27 30 43.0	1.950
5	16 13 11.62	2.0883	23 37 50.2	7.664	5	17 58 43.19	2.2963	27 32 35.8	1.811
6	16 15 17.07	2.0932	23 45 27.0	7.562	6	18 1 1.07	2.2996	27 34 20.3	1.671
7	16 17 22.81	2.0980	23 52 57.6	7.458	7	18 3 19.15	2.3028	27 35 56.3	1.530
8	16 19 28.83	2.1028	24 0 22.0	7.354	8	18 5 37.41	2.3059	27 37 23.8	1.388
9	16 21 35.14	2.1076	24 7 40.1	7.249	9	18 7 55.86	2.3090	27 38 42.8	1.246
10	16 23 41.74	2.1124	24 14 51.9	7.143	10	18 10 14.49	2.3120	27 39 53.3	1.104
11	16 25 48.63	2.1172	24 21 57.3	7.037	11	18 12 33.30	2.3149	27 40 55.3	0.962
12	16 27 55.80	2.1219	24 28 56.3	6.929	12	18 14 52.28	2.3177	27 41 48.7	0.818
13	16 30 3.26	2.1268	24 35 48.8	6.820	13	18 17 11.43	2.3205	27 42 33.4	0.673
14	16 32 11.01	2.1316	24 42 34.7	6.711	14	18 19 30.74	2.3232	27 43 9.4	0.528
15	16 34 19.05	2.1363	24 49 14.1	6.601	15	18 21 50.22	2.3259	27 43 36.8	0.383
16	16 36 27.37	2.1411	24 55 46.8	6.489	16	18 24 9.85	2.3284	27 43 55.4	0.238
17	16 38 35.98	2.1459	25 2 12.8	6.377	17	18 26 29.63	2.3308	27 44 5.3	− 0.092
18	16 40 44.88	2.1507	25 8 32.1	6.265	18	18 28 49.55	2.3332	27 44 6.4	+ 0.055
19	16 42 54.06	2.1554	25 14 44.6	6.151	19	18 31 9.61	2.3355	27 43 58.7	0.202
20	16 45 3.52	2.1601	25 20 50.2	6.037	20	18 33 29.81	2.3378	27 43 42.1	0.350
21	16 47 13.27	2.1648	25 26 49.0	5.922	21	18 35 50.15	2.3400	27 43 16.7	0.498
22	16 49 23.30	2.1694	25 32 40.8	5.805	22	18 38 10.61	2.3420	27 42 42.4	0.646
23	16 51 33.60	2.1741	25 38 25.6	5.687	23	18 40 31.19	2.3439	27 41 59.2	0.795
24	16 53 44.18	2.1787	S. 25 44 3.3	5.569	24	18 42 51.88	2.3458	S. 27 41 7.0	0.944

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 29.			
	h m s	s	° ′ ″	″
0	18 42 51.88	2.3458	S.27 41 7.0	0.944
1	18 45 12.69	2.3476	27 40 5.9	1.093
2	18 47 33.60	2.3493	27 38 55.8	1.243
3	18 49 54.61	2.3510	27 37 36.7	1.393
4	18 52 15.72	2.3527	27 36 8.6	1.543
5	18 54 36.93	2.3542	27 34 31.5	1.693
6	18 56 58.22	2.3555	27 32 45.4	1.844
7	18 59 19.59	2.3568	27 30 50.2	1.996
8	19 1 41.04	2.3581	27 28 45.9	2.147
9	19 4 2.56	2.3592	27 26 32.5	2.299
10	19 6 24.15	2.3603	27 24 10.0	2.451
11	19 8 45.80	2.3613	27 21 38.4	2.603
12	19 11 7.51	2.3622	27 18 57.6	2.756
13	19 13 29.27	2.3630	27 16 7.7	2.908
14	19 15 51.07	2.3638	27 13 8.7	3.059
15	10 18 12.92	2.3645	27 10 0.6	3.212
16	19 20 34.81	2.3650	27 6 43.3	3.365
17	19 22 56.72	2.3654	27 3 16.8	3.517
18	19 25 18.66	2.3658	26 59 41.2	3.670
19	19 27 40.62	2.3662	26 55 56.4	3.823
20	19 30 2.60	2.3665	26 52 2.4	3.976
21	19 32 24.60	2.3667	26 47 59.3	4.129
22	19 34 46.60	2.3668	26 43 47.0	4.282
23	19 37 8.61	2.3668	S.26 39 25.5	4.434
	FRIDAY 30.			
0	19 39 30.62	2.3667	S.26 34 54.9	4.587
1	19 41 52.62	2.3666	26 30 15.1	4.739
2	19 44 14.61	2.3663	26 25 26.2	4.892
3	19 46 36.58	2.3660	26 20 28.1	5.044
4	19 48 58.53	2.3656	26 15 20.9	5.197
5	19 51 20.45	2.3652	26 10 4.5	5.349
6	19 53 42.35	2.3648	26 4 39.0	5.501
7	19 56 4.22	2.3642	25 59 4.4	5.652
8	19 58 26.05	2.3634	25 53 20.7	5.804
9	20 0 47.83	2.3626	25 47 27.9	5.956
10	20 3 9.56	2.3618	25 41 26.0	6.107
11	20 5 31.25	2.3611	25 35 15.1	6.258
12	20 7 52.89	2.3602	25 28 55.1	6.409
13	20 10 14.47	2.3591	25 22 26.0	6.559
14	20 12 35.98	2.3580	25 15 48.0	6.708
15	20 14 57.43	2.3569	25 9 1.0	6.858
16	20 17 18.81	2.3557	25 2 5.0	7.007
17	20 19 40.11	2.3544	24 55 0.1	7.156
18	20 22 1.34	2.3531	24 47 46.3	7.304
19	20 24 22.49	2.3518	24 40 23.6	7.453
20	20 26 43.56	2.3504	24 32 52.0	7.601
21	20 29 4.54	2.3489	24 25 11.5	7.748
22	20 31 25.43	2.3474	24 17 22.2	7.894
23	20 33 46.23	2.3458	24 9 24.2	8.040
24	20 36 6.93	2.3442	S.24 1 17.4	8.187

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY, OCTOBER 1.			
	h m s	s	° ′ ″	″
0	20 36 6.93	2.3442	S.24 1 17.4	8.187

PHASES OF THE MOON.

		d	h	m
○ Full Moon	Sept.	6	9	7.5
☾ Last Quarter		13	0	49 5
● New Moon		20	13	16.2
☽ First Quarter		28	18	19.1

		d	h
☾ Perigee	Sept.	8	11.0
☾ Apogee		24	6.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	SUN	W.	111° 48′ 36″	3177	113° 15′ 13″	3161	114° 42′ 9″	3145	116° 9′ 24″	3129
	Spica	W.	68 54 28	2822	70 28 27	2808	72 2 45	2792	73 37 23	2776
	Antares	W.	23 0 39	2831	24 34 26	2815	26 8 36	2798	27 43 7	2781
	MARS	E.	35 41 37	2804	34 7 14	2789	32 32 32	2775	30 57 32	2760
	Fomalhaut	E.	61 35 0	3052	60 5 52	3045	58 36 35	3039	57 7 10	3033
	α Pegasi	E.	82 33 24	3186	81 6 58	3174	79 40 18	3163	78 13 25	3152
2	Spica	W.	81 35 48	2695	83 12 34	2678	84 49 43	2661	86 27 15	2645
	Antares	W.	35 41 17	2695	37 18 3	2678	38 55 13	2660	40 32 46	2643
	Fomalhaut	E.	49 38 33	3016	48 8 40	3016	46 38 47	3018	45 8 56	3022
	α Pegasi	E.	70 55 48	3104	69 27 43	3096	67 59 28	3089	66 31 5	3082
	JUPITER	E.	100 5 10	2666	98 27 44	2649	96 49 55	2632	95 11 43	2615
3	Antares	W.	48 46 29	2555	50 26 26	2538	52 6 47	2520	53 47 32	2502
	α Pegasi	E.	59 7 42	3069	57 38 55	3073	56 10 12	3077	54 41 34	3083
	JUPITER	E.	86 54 52	2528	85 14 18	2511	83 33 20	2494	81 51 58	2477
	α Arietis	E.	99 38 56	2621	98 0 30	2604	96 21 40	2586	94 42 26	2568
4	Antares	W.	62 17 22	2417	64 0 32	2401	65 44 5	2384	67 28 2	2368
	α Pegasi	E.	47 21 36	3164	45 54 44	3193	44 28 26	3227	43 2 49	3268
	JUPITER	E.	73 19 5	2391	71 35 18	2375	69 51 8	2359	68 6 35	2343
	α Arietis.	E.	86 20 15	2484	84 38 39	2468	82 56 41	2452	81 14 20	2437
5	Antares	W.	76 13 26	2293	77 59 36	2279	79 46 7	2265	81 32 58	2252
	JUPITER	E.	59 18 7	2268	57 31 20	2253	55 44 12	2240	53 56 44	2227
	α Arietis	E.	72 37 22	2367	70 53 0	2355	69 8 20	2343	67 23 23	2332
	Aldebaran	E.	102 54 3	2334	101 8 53	2318	99 23 20	2304	97 37 27	2291
6	Antares	W.	90 31 52	2193	92 20 30	2183	94 9 23	2173	95 58 31	2164
	α Aquilæ	W.	50 17 13	3821	51 31 53	3730	52 48 8	3647	54 5 52	3569
	MARS	W.	31 54 54	2202	33 43 18	2192	35 31 57	2183	37 20 50	2174
	JUPITER	E.	44 54 41	2167	43 5 24	2157	41 15 52	2147	39 26 5	2138
	α Arietis	E.	58 34 57	2288	56 48 40	2281	55 2 13	2276	53 15 38	2272
	Aldebaran	E.	88 43 22	2232	86 55 42	2222	85 7 47	2212	83 19 38	2203
7	α Aquilæ	W.	60 53 29	3275	62 18 10	3231	63 43 43	3190	65 10 4	3154
	MARS	W.	46 28 17	2139	48 18 17	2134	50 8 24	2129	51 58 39	2125
	α Arietis	E.	44 21 55	2272	42 35 14	2277	40 48 41	2285	39 2 19	2294
	Aldebaran	E.	74 15 50	2169	72 26 36	2165	70 37 15	2160	68 47 47	2157
8	α Aquilæ	W.	72 31 24	3022	74 1 10	3004	75 31 18	2989	77 1 45	2975
	MARS	W.	61 11 6	2114	63 1 44	2114	64 52 22	2114	66 43 0	2115
	Fomalhaut	W.	39 46 3	2548	41 26 9	2515	43 7 1	2487	44 48 32	2462
	Aldebaran	E.	59 39 40	2153	57 50 1	2154	56 0 24	2157	54 10 51	2160
9	α Aquilæ	W.	84 37 7	2945	86 8 29	2945	87 39 51	2947	89 11 10	2951
	MARS	W.	75 55 32	2128	77 45 49	2132	79 36 0	2137	81 26 3	2141
	Fomalhaut	W.	53 23 20	2384	55 7 17	2376	56 51 26	2369	58 35 45	2364
	α Pegasi	W.	37 6 19	3252	38 31 27	3166	39 58 17	3091	41 26 37	3026
	Aldebaran	E.	45 4 52	2192	43 16 13	2202	41 27 48	2213	39 39 40	2227
	Pollux	E.	88 36 25	2107	86 45 36	2111	84 54 53	2115	83 4 16	2120
	VENUS	E.	98 9 28	2423	96 26 26	2426	94 43 29	2431	93 0 38	2436

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	**Sun**	W.	117° 36′ 59″	3112	119° 4′ 54″	3096	120° 33′ 9″	3078	122° 1′ 45″	3060
	Spica	W.	75 12 22	2761	76 47 41	2744	78 23 22	2729	79 59 24	2712
	Antares	W.	29 18 0	2764	30 53 15	2747	32 28 53	2729	34 4 54	2713
	Mars	E.	29 22 12	2746	27 46 33	2730	26 10 33	2715	24 34 13	2699
	Fomalhaut	E.	55 37 38	3027	54 7 59	3022	52 38 14	3019	51 8 25	3017
	α Pegasi	E.	76 46 18	3142	75 18 59	3131	73 51 27	3121	72 23 43	3112
2	Spica	W.	88 5 9	2628	89 43 26	2610	91 22 7	2593	93 1 11	2575
	Antares	W.	42 10 43	2625	43 49 4	2608	45 27 48	2591	47 6 56	2572
	Fomalhaut	E.	43 39 11	3029	42 9 34	3039	40 40 9	3052	39 11 1	3070
	α Pegasi	E.	65 2 34	3078	63 33 57	3073	62 5 15	3070	60 36 29	3069
	Jupiter	E.	93 33 8	2598	91 54 10	2580	90 14 48	2563	88 35 2	2545
3	Antares	W.	55 28 42	2485	57 10 16	2468	58 52 14	2451	60 34 36	2434
	α Pegasi	E.	53 13 4	3092	51 44 45	3105	50 16 42	3120	48 48 57	3140
	Jupiter	E.	80 10 12	2460	78 28 2	2442	76 45 27	2425	75 2 28	2408
	α Arietis	E.	93 2 47	2551	91 22 44	2534	89 42 18	2517	88 1 28	2500
4	Antares	W.	69 12 22	2353	70 57 5	2337	72 42 10	2322	74 27 37	2307
	α Pegasi	E.	41 38 0	3317	40 14 8	3374	38 51 22	3443	37 29 54	3523
	Jupiter	E.	66 21 38	2328	64 36 19	2312	62 50 37	2297	61 4 33	2282
	α Arietis	E.	79 31 38	2422	77 48 34	2408	76 5 10	2394	74 21 26	2380
5	Antares	W.	83 20 8	2239	85 7 37	2227	86 55 25	2215	88 43 30	2204
	Jupiter	E.	52 8 57	2214	50 20 50	2202	48 32 25	2190	46 43 42	2178
	α Arietis	E.	65 38 10	2322	63 52 42	2311	62 6 59	2303	60 21 4	2295
	Aldebaran	E.	95 51 15	2279	94 4 44	2266	92 17 54	2253	90 30 46	2243
6	Antares	W.	97 47 53	2155	99 37 28	2147	101 27 15	2139	103 17 14	2132
	α Aquilæ	W.	55 25 0	3499	56 45 25	3435	58 7 2	3377	59 29 45	3324
	Mars	W.	39 9 56	2166	40 59 15	2159	42 48 45	2151	44 38 26	2145
	Jupiter -	E.	37 36 4	2130	35 45 50	2121	33 55 23	2114	32 4 45	2107
	α Arietis	E.	51 28 58	2270	49 42 14	2268	47 55 27	2268	46 8 40	2269
	Aldebaran	E.	81 31 15	2195	79 42 40	2187	77 53 53	2180	76 4 56	2174
7	α Aquilæ	W.	66 37 8	3121	68 4 52	3091	69 33 12	3065	71 2 4	3043
	Mars	W.	53 49 0	2122	55 39 26	2119	57 29 56	2116	59 20 30	2115
	α Arietis	E.	37 16 11	2307	35 30 22	2323	33 44 56	2342	31 59 58	2366
	Aldebaran	E.	66 58 15	2155	65 8 39	2153	63 19 0	2152	61 29 20	2152
8	α Aquilæ	W.	78 32 29	2965	80 3 26	2957	81 34 33	2951	83 5 47	2946
	Mars	W.	68 33 36	2116	70 24 10	2118	72 14 42	2121	74 5 9	2124
	Fomalhaut	W.	46 30 38	2441	48 13 14	2424	49 56 15	2408	51 39 38	2395
	Aldebaran	E.	52 21 23	2165	50 32 2	2169	48 42 48	2176	46 53 44	2184
9	α Aquilæ	W.	90 42 24	2957	92 13 31	2965	93 44 28	2974	95 15 13	2986
	Mars	W.	83 15 59	2147	85 5 46	2153	86 55 24	2161	88 44 51	2167
	Fomalhaut	W.	60 20 11	2360	62 4 43	2358	63 49 18	2357	65 33 55	2357
	α Pegasi	W.	42 56 17	2970	44 27 7	2923	45 58 57	2881	47 31 40	2845
	Aldebaran	E.	37 51 52	2241	36 4 26	2258	34 17 24	2277	32 30 54	2295
	Pollux	E.	81 13 47	2125	79 23 26	2130	77 33 13	2137	75 43 10	2143
	Venus	E.	91 17 55	2441	89 35 19	2448	87 52 52	2455	86 10 35	2462

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Mars	W.	90° 34′ 8″	2175	92° 23′ 13″	2182	94° 12′ 7″	2191	96° 0′ 48″	2199
	Fomalhaut	W.	67 18 31	2358	69 3 6	2361	70 47 37	2364	72 32 4	2368
	α Pegasi	W.	49 5 10	2814	50 39 20	2787	52 14 5	2764	53 49 20	2744
	Pollux	E.	73 53 16	2150	72 3 33	2157	70 14 1	2165	68 24 41	2174
	Venus	E.	84 28 28	2470	82 46 32	2478	81 4 48	2487	79 23 16	2496
11	Fomalhaut	W.	81 12 27	2400	82 56 2	2408	84 39 25	2417	86 22 35	2427
	α Pegasi	W.	61 50 42	2689	63 27 36	2684	65 4 37	2681	66 41 42	2680
	Jupiter	W.	28 57 20	2189	30 46 4	2199	32 34 33	2209	34 22 47	2219
	Pollux	E.	59 21 16	2219	57 33 17	2229	55 45 32	2239	53 58 3	2250
	Venus	E.	70 59 3	2548	69 18 57	2561	67 39 8	2572	65 59 35	2585
	Sun	E.	116 42 56	2533	115 2 29	2544	113 22 17	2554	111 42 19	2565
12	α Pegasi	W.	74 47 2	2691	76 23 54	2697	78 0 38	2703	79 37 14	2710
	Jupiter	W.	43 20 6	2272	45 6 46	2283	46 53 10	2295	48 39 17	2306
	α Arietis	W.	31 15 39	2556	32 55 35	2544	34 35 47	2535	36 16 11	2530
	Pollux	E.	45 4 36	2304	43 18 43	2316	41 33 7	2328	39 47 48	2340
	Venus	E.	57 46 12	2651	56 8 26	2666	54 31 0	2681	52 53 54	2695
	Regulus	E.	81 37 13	2314	79 51 34	2325	78 6 11	2337	76 21 5	2348
	Sun	E.	103 26 16	2621	101 47 50	2634	100 9 41	2646	98 31 48	2657
13	Jupiter	W.	57 25 47	2362	59 10 16	2374	60 54 28	2385	62 38 24	2396
	α Arietis	W.	44 39 11	2530	46 19 43	2534	48 0 9	2538	49 40 29	2544
	Pollux	E.	31 5 34	2401	29 22 0	2412	27 38 43	2425	25 55 44	2438
	Venus	E.	44 53 28	2775	43 18 27	2792	41 43 49	2810	40 9 34	2828
	Regulus	E.	67 39 47	2407	65 56 22	2419	64 13 15	2431	62 30 25	2443
	Sun	E.	90 26 29	2719	88 50 15	2732	87 14 17	2744	85 38 35	2756
14	Jupiter	W.	71 14 2	2453	72 56 22	2464	74 38 26	2475	76 20 15	2485
	α Arietis	W.	58 0 0	2579	59 39 24	2586	61 18 38	2595	62 57 40	2603
	Aldebaran	W.	27 49 27	2674	29 26 42	2666	31 4 7	2662	32 41 38	2659
	Regulus	E.	54 0 30	2504	52 19 22	2516	50 38 31	2528	48 57 57	2540
	Sun	E.	77 44 11	2818	76 10 6	2830	74 36 17	2842	73 2 44	2854
15	Jupiter	W.	84 45 33	2538	86 25 53	2549	88 5 58	2559	89 45 49	2569
	α Arietis	W.	71 9 55	2647	72 47 46	2657	74 25 24	2666	76 2 50	2675
	Aldebaran	W.	40 49 25	2668	42 26 48	2672	44 4 5	2678	45 41 15	2683
	Regulus	E.	40 39 21	2602	39 0 29	2615	37 21 55	2628	35 43 38	2642
	Sun	E.	65 18 47	2913	63 46 45	2924	62 14 57	2936	60 43 24	2948
16	Jupiter	W.	98 1 39	2618	99 40 9	2628	101 18 26	2637	102 56 31	2646
	α Arietis	W.	84 6 53	2722	85 43 4	2731	87 19 3	2741	88 54 49	2750
	Aldebaran	W.	53 45 3	2716	55 21 22	2723	56 57 31	2730	58 33 31	2738
	Sun	E.	53 9 13	3003	51 39 4	3014	50 9 9	3025	48 39 27	3036
17	Aldebaran	W.	66 30 56	2776	68 5 55	2785	69 40 43	2792	71 15 22	2800
	Pollux	W.	22 15 16	2741	23 51 2	2747	25 26 39	2755	27 2 6	2762
	Sun	E.	41 14 17	3089	39 45 54	3101	38 17 45	3111	36 49 49	3122
18	Aldebaran	W.	79 6 0	2839	80 39 37	2847	82 13 4	2855	83 46 21	2862
	Pollux	W.	34 56 51	2801	36 31 18	2809	38 5 34	2817	39 39 40	2825
	Sun	E.	29 33 26	3178	28 6 50	3190	26 40 29	3202	25 14 22	3215

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	Mars	W.	97° 49′ 17″	2208	99° 37′ 32″	2218	101° 25′ 33″	2227	103° 13′ 20″	2237
	Fomalhaut	W.	74 16 25	2373	76 0 39	2378	77 44 45	2385	79 28 41	2392
	α Pegasi	W.	55 25 1	2729	57 1 3	2715	58 37 23	2704	60 13 57	2696
	Pollux	E.	66 35 34	2182	64 46 39	2191	62 57 58	2200	61 9 30	2209
	Venus	E.	77 41 57	2506	76 0 52	2516	74 20 1	2526	72 39 24	2538
11	Fomalhaut	W.	88 5 31	2437	89 48 13	2448	91 30 40	2459	93 12 51	2470
	α Pegasi	W.	68 18 49	2680	69 55 56	2681	71 33 2	2684	73 10 4	2687
	Jupiter	W.	36 10 46	2229	37 58 30	2240	39 45 58	2251	41 33 10	2262
	Pollux	E.	52 10 50	2261	50 23 53	2271	48 37 11	2282	46 50 45	2294
	Venus	E.	64 20 19	2597	62 41 20	2610	61 2 39	2624	59 24 16	2638
	Sun	E.	110 2 36	2576	108 23 8	2587	106 43 55	2599	105 4 58	2610
12	α Pegasi	W.	81 13 41	2718	82 49 57	2726	84 26 2	2736	86 1 54	2747
	Jupiter	W.	50 25 8	2317	52 10 42	2328	53 56 0	2339	55 41 2	2351
	α Arietis	W.	37 56 43	2527	39 37 19	2525	41 17 58	2525	42 58 36	2527
	Pollux	E.	38 2 47	2352	36 18 3	2364	34 33 36	2375	32 49 26	2388
	Venus	E.	51 17 7	2710	49 40 41	2725	48 4 35	2742	46 28 51	2758
	Regulus	E.	74 36 15	2360	72 51 43	2371	71 7 27	2384	69 23 29	2395
	Sun	E.	96 54 11	2670	95 16 51	2682	93 39 47	2695	92 3 0	2707
13	Jupiter	W.	64 22 4	2408	66 5 28	2419	67 48 35	2431	69 31 26	2441
	α Arietis	W.	51 20 41	2550	53 0 45	2556	54 40 40	2564	56 20 25	2571
	Pollux	E.	24 13 3	2451	22 30 41	2465	20 48 38	2479	19 6 55	2494
	Venus	E.	38 35 42	2848	37 2 16	2867	35 29 15	2888	33 56 41	2909
	Regulus	E.	60 47 52	2455	59 5 36	2467	57 23 37	2480	55 41 55	2492
	Sun	E.	84 3 10	2769	82 28 1	2781	80 53 8	2793	79 18 31	2806
14	Jupiter	W.	78 1 49	2496	79 43 8	2507	81 24 11	2518	83 4 59	2528
	α Arietis	W.	64 36 31	2612	66 15 10	2621	67 53 37	2629	69 31 52	2638
	Aldebaran	W.	34 19 13	2658	35 56 49	2659	37 34 24	2661	39 11 56	2663
	Regulus	E.	47 17 40	2553	45 37 40	2564	43 57 56	2577	42 18 30	2590
	Sun	E.	71 29 26	2866	69 56 23	2878	68 23 36	2890	66 51 4	2901
15	Jupiter	W.	91 25 26	2580	93 4 49	2589	94 43 59	2599	96 22 56	2609
	α Arietis	W.	77 40 3	2684	79 17 4	2693	80 53 53	2703	82 30 29	2712
	Aldebaran	W.	47 18 18	2689	48 55 12	2695	50 31 58	2702	52 8 35	2709
	Regulus	E.	34 5 40	2655	32 28 0	2669	30 50 39	2684	29 13 38	2699
	Sun	E.	59 12 6	2959	57 41 2	2970	56 10 12	2981	54 39 36	2992
16	Jupiter	W.	104 34 23	2655	106 12 3	2665	107 49 30	2674	109 26 45	2683
	α Arietis	W.	90 30 23	2759	92 5 45	2769	93 40 54	2778	95 15 51	2787
	Aldebaran	W.	60 9 20	2746	61 44 59	2753	63 20 28	2761	64 55 47	2769
	Sun	E.	47 9 59	3047	45 40 44	3057	44 11 42	3068	42 42 53	3078
17	Aldebaran	W.	72 49 50	2808	74 24 8	2816	75 58 15	2823	77 32 13	2831
	Pollux	W.	28 37 24	2770	30 12 31	2778	31 47 28	2785	33 22 15	2794
	Sun	E.	35 22 6	3133	33 54 36	3143	32 27 19	3155	31 0 16	3166
18	Aldebaran	W.	85 19 28	2870	86 52 25	2878	88 25 12	2886	89 57 49	2894
	Pollux	W.	41 13 36	2832	42 47 22	2840	44 20 58	2848	45 54 24	2855
	Sun	E.	23 48 31	3229	22 22 56	3243	20 57 38	3260	19 32 40	3279

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
22	**Sun**	W.	16° 8′ 54″	3478	17° 29′ 43″	3470	18° 50′ 41″	3465	20° 11′ 44″	3463
	Antares	E.	52 40 31	3022	51 10 46	3027	49 41 7	3033	48 11 35	3038
	α Aquilæ	E.	101 27 9	3893	100 13 42	3890	99 0 12	3888	97 46 40	3886
	Mars	E.	113 29 58	3105	112 1 54	3111	110 33 58	3117	109 6 9	3122
23	**Sun**	W.	26 57 22	3462	28 18 29	3463	29 39 35	3463	31 0 40	3465
	Antares	E.	40 45 22	3060	39 16 24	3064	37 47 30	3068	36 18 41	3072
	α Aquilæ	E.	91 38 56	3892	90 25 28	3896	89 12 4	3900	87 58 44	3904
	Mars	E.	101 48 35	3147	100 21 22	3150	98 54 13	3154	97 27 9	3158
24	**Sun**	W.	37 45 44	3470	39 6 42	3470	40 27 40	3471	41 48 37	3471
	Antares	E.	28 55 40	3087	27 27 14	3090	25 58 52	3091	24 30 32	3095
	α Aquilæ	E.	81 53 27	3938	80 40 46	3946	79 28 13	3956	78 15 50	3967
	Mars	E.	90 12 49	3173	88 46 7	3174	87 19 27	3177	85 52 50	3178
25	**Sun**	W.	48 33 27	3467	49 54 28	3464	51 15 32	3463	52 36 38	3461
	α Aquilæ	E.	72 16 49	4032	71 5 41	4048	69 54 49	4066	68 44 14	4084
	Mars	E.	78 39 59	3179	77 13 25	3179	75 46 51	3178	74 20 15	3177
	Fomalhaut	E.	99 45 52	3263	98 20 57	3259	96 55 58	3257	95 30 56	3254
26	**Sun**	W.	59 22 58	3442	60 44 27	3436	62 6 3	3431	63 27 44	3425
	α Aquilæ	E.	62 56 12	4198	61 47 44	4226	60 39 42	4256	59 32 9	4290
	Mars	E.	67 6 42	3163	65 39 49	3159	64 12 51	3155	62 45 48	3150
	Fomalhaut	E.	88 24 54	3238	86 59 30	3234	85 34 1	3230	84 8 27	3225
	α Pegasi	E.	108 26 42	3463	107 5 37	3454	105 44 21	3443	104 22 53	3432
27	**Sun**	W.	70 18 0	3389	71 40 29	3381	73 3 7	3372	74 25 56	3362
	α Aquilæ	E.	54 2 51	4500	52 58 59	4552	51 55 53	4611	50 53 38	4675
	Mars	E.	55 28 57	3120	54 1 12	3113	52 33 18	3105	51 5 15	3096
	Fomalhaut	E.	76 59 19	3202	75 33 12	3198	74 7 0	3192	72 40 41	3187
	α Pegasi	E.	97 32 40	3382	96 10 3	3372	94 47 15	3363	93 24 16	3353
28	**Sun**	W.	81 22 55	3307	82 46 58	3295	84 11 15	3282	85 35 47	3270
	Antares	W.	18 52 4	2960	20 23 7	2946	21 54 28	2932	23 26 6	2918
	Mars	E.	43 42 14	3049	42 13 2	3038	40 43 36	3026	39 13 56	3014
	Fomalhaut	E.	65 27 28	3158	64 0 29	3153	62 33 24	3148	61 6 12	3143
	α Pegasi	E.	86 26 34	3305	85 2 28	3295	83 38 11	3286	82 13 43	3276
	Jupiter	E.	114 24 26	2894	112 52 0	2882	111 19 18	2871	109 46 22	2859
29	**Sun**	W.	92 42 29	3197	94 8 42	3182	95 35 13	3165	97 2 4	3148
	Antares	W.	31 8 49	2845	32 42 18	2830	34 16 7	2815	35 50 16	2799
	Mars	E.	31 41 46	2950	30 10 30	2936	28 38 57	2922	27 7 6	2907
	Fomalhaut	E.	53 48 52	3123	52 21 10	3121	50 53 26	3119	49 25 40	3120
	α Pegasi	E.	75 8 42	3232	73 43 11	3225	72 17 31	3216	70 51 41	3209
	Jupiter	E.	101 57 40	2793	100 23 3	2779	98 48 7	2763	97 12 51	2749
30	**Sun**	W.	104 21 27	3060	105 50 25	3043	107 19 45	3024	108 49 28	3005
	Antares	W.	43 46 16	2716	45 22 34	2698	46 59 16	2681	48 36 21	2663
	Fomalhaut	E.	42 7 28	3144	40 40 12	3157	39 13 11	3173	37 46 29	3193
	α Pegasi	E.	63 40 36	3162	62 14 5	3178	60 47 30	3177	59 20 53	3177
	Jupiter	E.	89 11 25	2668	87 34 2	2652	85 56 17	2634	84 18 8	2617
	α Arietis	E.	104 36 7	2784	103 1 18	2766	101 26 5	2747	99 50 28	2729

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
22	**Sun**	W.	21° 32′ 50″	3461	22° 53′ 58″	3461	24° 15′ 6″	3461	25° 36′ 14″	3461
	Antares	E.	46 42 9	3043	45 12 49	3047	43 43 34	3052	42 14 25	3056
	α Aquilæ	E.	96 33 6	3886	95 19 32	3887	94 5 59	3888	92 52 27	3889
	Mars	E.	107 38 26	3127	106 10 49	3133	104 43 19	3137	103 15 54	3142
23	**Sun**	W.	32 21 43	3466	33 42 45	3467	35 3 46	3469	36 24 45	3469
	Antares	E.	34 49 57	3075	33 21 17	3078	31 52 41	3082	30 24 9	3084
	α Aquilæ	E.	86 45 28	3910	85 32 18	3916	84 19 14	3922	83 6 17	3929
	Mars	E.	96 0 9	3162	94 33 14	3164	93 6 22	3168	91 39 34	3170
24	**Sun**	W.	43 9 34	3471	44 30 31	3470	45 51 29	3470	47 12 27	3468
	Antares	E.	23 2 16	3096	21 34 2	3100	20 5 52	3103	18 37 46	3106
	α Aquilæ	E.	77 3 38	3978	75 51 37	3990	74 39 48	4004	73 28 12	4017
	Mars	E.	84 26 14	3179	82 59 40	3179	81 33 6	3180	80 6 33	3179
25	**Sun**	W.	53 57 46	3457	55 18 58	3454	56 40 14	3450	58 1 34	3446
	α Aquilæ	E.	67 33 57	4104	66 23 59	4125	65 14 21	4147	64 5 5	4172
	Mars	E.	72 53 38	3174	71 26 58	3173	70 0 16	3170	68 33 31	3167
	Fomalhaut	E.	94 5 51	3251	92 40 42	3248	91 15 30	3245	89 50 14	3242
26	**Sun**	W.	64 49 32	3419	66 11 27	3412	67 33 30	3406	68 55 41	3398
	α Aquilæ	E.	58 25 7	4325	57 18 37	4364	56 12 43	4406	55 7 27	4450
	Mars	E.	61 18 39	3145	59 51 24	3139	58 24 2	3133	56 56 33	3128
	Fomalhaut	E.	82 42 48	3221	81 17 4	3217	79 51 15	3212	78 25 20	3207
	α Pegasi	E.	103 1 13	3423	101 39 22	3412	100 17 19	3402	98 55 5	3393
27	**Sun**	W.	75 48 56	3352	77 12 7	3342	78 35 30	3331	79 59 6	3319
	α Aquilæ	E.	49 52 17	4745	48 51 55	4821	47 52 36	4905	46 54 25	4998
	Mars	E.	49 37 1	3088	48 8 37	3078	46 40 1	3069	45 11 14	3059
	Fomalhaut	E.	71 14 16	3181	69 47 44	3175	68 21 5	3170	66 54 20	3164
	α Pegasi	E.	92 1 6	3344	90 37 45	3333	89 14 12	3325	87 50 29	3314
28	**Sun**	W.	87 0 34	3256	88 25 37	3242	89 50 57	3227	91 16 34	3212
	Antares	W.	24 58 2	2904	26 30 16	2890	28 2 48	2875	29 35 39	2860
	Mars	E.	37 44 1	3002	36 13 51	2990	34 43 26	2977	33 12 44	2964
	Fomalhaut	E.	59 38 55	3138	58 11 32	3133	56 44 3	3130	55 16 30	3126
	α Pegasi	E.	80 49 4	3267	79 24 14	3259	77 59 14	3249	76 34 3	3241
	Jupiter	E.	108 13 11	2847	106 39 44	2834	105 6 0	2821	103 31 59	2807
29	**Sun**	W.	98 29 15	3132	99 56 46	3114	101 24 38	3096	102 52 52	3079
	Antares	W.	37 24 45	2783	38 59 35	2766	40 34 47	2750	42 10 20	2733
	Mars	E.	25 34 56	2893	24 2 28	2877	22 29 40	2862	20 56 32	2846
	Fomalhaut	E.	47 57 55	3121	46 30 11	3124	45 2 30	3129	43 34 55	3135
	α Pegasi	E.	69 25 43	3203	67 59 37	3196	66 33 23	3190	65 7 2	3186
	Jupiter	E.	95 37 16	2733	94 1 20	2717	92 25 3	2701	90 48 25	2685
30	**Sun**	W.	110 19 35	2985	111 50 6	2966	113 21 1	2946	114 52 21	2926
	Antares	W.	50 13 50	2646	51 51 43	2627	53 30 1	2609	55 8 44	2590
	Fomalhaut	E.	36 20 11	3218	34 54 23	3249	33 29 12	3288	32 4 46	3336
	α Pegasi	E.	57 54 16	3178	56 27 40	3180	55 1 7	3185	53 34 40	3192
	Jupiter	E.	82 39 36	2599	81 0 40	2581	79 21 19	2563	77 41 33	2545
	α Arietis	E.	98 14 26	2710	96 38 0	2692	95 1 9	2674	93 23 54	2655

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sat.	1	12 32 9.31	9.063	S. 3 28 20.4	-58.18	16 1.63	64.38	10 32.07	0.791
SUN.	2	12 35 46.97	9.076	3 51 35.7	58.07	16 1.91	64.43	10 50.92	0.778
Mon.	3	12 39 24.94	9.089	4 14 48.2	57.95	16 2.19	64.48	11 9.45	0.765
Tues.	4	12 43 3.24	9.104	4 37 57.6	-57.82	16 2.47	64.54	11 27.65	0.750
Wed.	5	12 46 41.90	9.119	5 1 3.5	57.67	16 2.75	64.60	11 45.49	0.735
Thur.	6	12 50 20.95	9.136	5 24 5.6	57.51	16 3.03	64.66	12 2.94	0.718
Frid.	7	12 54 0.41	9.153	5 47 3.6	-57.33	16 3.30	64.72	12 19.98	0.701
Sat.	8	12 57 40.30	9.172	6 9 57.1	57.14	16 3.58	64.78	12 36.61	0.682
SUN.	9	13 1 20.64	9.191	6 32 45.9	56.93	16 3.85	64.85	12 52.78	0.663
Mon.	10	13 5 1.45	9.211	6 55 29.6	-56.71	16 4.13	64.92	13 8.48	0.643
Tues.	11	13 8 42.76	9.232	7 18 7.8	56.47	16 4.40	64.99	13 23.68	0.622
Wed.	12	13 12 24.59	9.254	7 40 40.1	56.22	16 4.67	65 06	13 38.36	0.600
Thur.	13	13 16 6.95	9.276	8 3 6.2	-55.95	16 4.94	65.14	13 52.51	0.576
Frid.	14	13 19 49.87	9.300	8 25 25.8	55.67	16 5.21	65.22	14 6.11	0.554
Sat.	15	13 23 33.36	9.324	8 47 38.4	55.37	16 5.48	65.30	14 19.14	0.530
SUN.	16	13 27 17.44	9.349	9 9 43.6	-55.05	16 5.75	65.38	14 31.58	0.505
Mon.	17	13 31 2.13	9.374	9 31 41.0	54.72	16 6.02	65.47	14 43.41	0.480
Tues.	18	13 34 47.43	9.400	9 53 30.3	54.37	16 6.29	65.56	14 54.63	0.454
Wed.	19	13 38 33.38	9.427	10 15 11.0	-54.01	16 6.55	65.65	15 5.21	0.427
Thur.	20	13 42 19.98	9.454	10 36 42.7	53.62	16 6.82	65.74	15 15.14	0.400
Frid.	21	13 46 7.24	9.482	10 58 5.0	53.22	16 7.09	65.84	15 24.41	0.372
Sat.	22	13 49 55.17	9.510	11 19 17.4	-52.80	16 7.36	65.94	15 33.02	0.344
SUN.	23	13 53 43.78	9.540	11 40 19.5	52.36	16 7.62	66.04	15 40.94	0.315
Mon.	24	13 57 33.08	9.569	12 1 10.9	51.91	16 7.89	66.14	15 48.17	0.286
Tues.	25	14 1 23.09	9.599	12 21 51.2	-51.44	16 8.15	66.25	15 54.70	0.256
Wed.	26	14 5 13.82	9.629	12 42 20.0	50.95	16 8.42	66.36	16 0.52	0.226
Thur.	27	14 9 5.27	9.659	13 2 36.9	50.44	16 8.68	66.47	16 5.61	0.196
Frid.	28	14 12 57.46	9.690	13 22 41.4	-49.92	16 8.94	66.58	16 9.95	0.165
Sat.	29	14 16 50.40	9.722	13 42 33.1	49.38	16 9.20	66.69	16 13.55	0.133
SUN.	30	14 20 44.10	9.754	14 2 11.6	48.82	16 9.46	66.80	16 16.40	0.101
Mon.	31	14 24 38.58	9.786	14 21 36.6	48.25	16 9.72	66.92	16 18.48	0.069
Tues.	32	14 28 33.84	9.819	S. 14 40 47.6	-47.66	16 9.98	67.03	16 19.77	0.036

NOTE.—The mean time of semidiameter passing may be found by subtracting 0ˢ.18 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Sat.	1	12 32 10.90	9.065	S. 3 28 30.6	−58.19	10 32.20	0.791	12 42 43.10
SUN.	2	12 35 48.61	9.078	3 51 46.2	58.08	10 51.05	0.778	12 46 39.66
Mon.	3	12 39 26.63	9.091	4 14 59.0	57.96	11 9.58	0.765	12 50 36.21
Tues.	4	12 43 4.98	9.106	4 38 8.6	−57.83	11 27.79	0.750	12 54 32.77
Wed.	5	12 46 43.69	9.121	5 1 14.8	57.68	11 45.63	0.735	12 58 29.32
Thur.	6	12 50 22.79	9.138	5 24 17 2	57.52	12 3.08	0.718	13 2 25.87
Frid.	7	12 54 2.30	9.155	5 47 15.4	−57.34	12 20.12	0.701	13 6 22.42
Sat.	8	12 57 42.23	9.174	6 10 9.1	57.15	12 36.75	0.682	13 10 18.98
SUN.	9	13 1 22.61	9.193	6 32 58.1	56.94	12 52.92	0.663	13 14 15.53
Mon.	10	13 5 3.47	9.213	6 55 42.0	−56.72	13 8.62	0.643	13 18 12.09
Tues.	11	13 8 44.82	9.234	7 18 20.4	56.48	13 23.82	0.622	13 22 8.64
Wed.	12	13 12 26.69	9.256	7 40 52.9	56.23	13 38.50	0.600	13 26 5.19
Thur.	13	13 16 9.09	9.278	8 3 19.2	−55.96	13 52.65	0.578	13 30 1.74
Frid.	14	13 19 52.05	9.302	8 25 38.9	55.68	14 6.25	0.554	13 33 58.30
Sat.	15	13 23 35.58	9.326	8 47 51.6	55.38	14 19.27	0.530	13 37 54.85
SUN.	16	13 27 19.70	9.351	9 9 56.9	−55.06	14 31.70	0.505	13 41 51.41
Mon.	17	13 31 4.43	9.376	9 31 54.4	54.73	14 43.53	0.480	13 45 47.96
Tues.	18	13 34 49.77	9.402	9 53 43.8	54.38	14 54.75	0.454	13 49 44.52
Wed.	19	13 38 35.75	9.429	10 15 24.6	−54.01	15 5.33	0.427	13 53 41.07
Thur.	20	13 42 22.38	9.456	10 36 56.3	53.62	15 15.25	0.400	13 57 37.63
Frid.	21	13 46 9.67	9.484	10 58 18.6	53.22	15 24.51	0.372	14 1 34.18
Sat.	22	13 49 57.63	9.512	11 19 31.1	−52.80	15 33.11	0.344	14 5 30.74
SUN.	23	13 53 46.27	9.541	11 40 33.2	52.36	15 41.03	0.315	14 9 27.29
Mon.	24	13 57 35.60	9.570	12 1 24.6	51.91	15 48.25	0.286	14 13 23.85
Tues.	25	14 1 25.63	9.600	12 22 4.9	−51.44	15 54.77	0.256	14 17 20.40
Wed.	26	14 5 16.38	9.630	12 42 33.6	50.95	16 0.58	0.226	14 21 16.96
Thur.	27	14 9 7.86	9.660	13 2 50.4	50.44	16 5.66	0.196	14 25 13.51
Frid.	28	14 13 0.07	9.691	13 22 54.8	−49.92	16 10.00	0.165	14 29 10.07
Sat.	29	14 16 53.03	9.723	13 42 46.4	49.38	16 13.59	0.133	14 33 6.62
SUN.	30	14 20 46.75	9.755	14 2 24.8	48.82	16 16.43	0.101	14 37 3.18
Mon.	31	14 24 41.24	9.787	14 21 49.7	48.25	16 18.50	0.069	14 40 59.73
Tues.	32	14 28 36.51	9.820	S. 14 41 0.6	−47.66	16 19.78	0.036	14 44 56.29

Note.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 hour, + $9^s.8565$. (Table III.)

AT GREENWICH MEAN NOON.								Mean Time of Sidereal Noon.
		THE SUN'S						
		TRUE LONGITUDE.				Logarithm of the Radius Vector of the Earth.		
Day of the Month.	Day of the Year.	λ	λ′	Diff. for 1 Hour.	LATITUDE.		Diff. for 1 Hour.	
		° ′ ″	′ ″	″	″			h m s
1	275	188 45 54.0	45 27.4	147.68	− 0.40	0.0001688	-53.2	11 15 25.95
2	276	189 44 59.2	44 32.5	147.76	0.37	0.0000413	53.1	11 11 30.03
3	277	190 44 6.2	43 39.4	147.84	0.32	9.9999142	52.9	11 7 34.12
4	278	191 43 15.1	42 48.2	147.92	− 0.24	9.9997875	-52.7	11 3 38.21
5	279	192 42 25.9	41 58.9	148.00	0.13	9.9996614	52.4	10 59 42.31
6	280	193 41 38.7	41 11.6	148.08	− 0.01	9.9995360	52.2	10 55 46.40
7	281	194 40 53.7	40 26.5	148.17	+ 0.12	9.9994112	-51.9	10 51 50.49
8	282	195 40 10.7	39 43.4	148.26	0.25	9.9992871	51.6	10 47 54.58
9	283	196 39 29.9	39 2.5	148.35	0.38	9.9991636	51.3	10 43 58.67
10	284	197 38 51.3	38 23.8	148.44	+ 0.50	9.9990408	-51.0	10 40 2.77
11	285	198 38 15.0	37 47.4	148.54	0.59	9.9989186	50.8	10 36 6.86
12	286	199 37 41.1	37 13.3	148.63	0.66	9.9987969	50.6	10 32 10.95
13	287	200 37 9.5	36 41.6	148.73	+ 0.71	9.9986756	-50.4	10 28 15.04
14	288	201 36 40 1	36 12.1	148.82	0.73	9.9985548	50.3	10 24 19.14
15	289	202 36 13.1	35 45.0	148.92	0.72	9.9984343	50.2	10 20 23.23
16	290	203 35 48.4	35 20.2	149.01	+ 0.68	9.9983138	-50.2	10 16 27.32
17	291	204 35 25.9	34 57.5	149.11	0.61	9.9981934	50.2	10 12 31.41
18	292	205 35 5.7	34 37.2	149.20	0.52	9.9980730	50.2	10 8 35.51
19	293	206 34 47.7	34 19.1	149.29	+ 0.41	9.9979526	-50.2	10 4 39.60
20	294	207 34 31.8	34 3.1	149.38	0.29	9.9978322	50.2	10 0 43.69
21	295	208 34 17.9	33 49.1	149.46	0.16	9.9977118	50.2	9 56 47.78
22	296	209 34 5.9	33 37.0	149.54	+ 0.02	9.9975914	-50.2	9 52 51 87
23	297	210 33 55.8	33 26.7	149.62	− 0.11	9.9974710	50.1	9 48 55.96
24	298	211 33 47.5	33 18.3	149.70	0.22	9.9973508	50.0	9 45 0.05
25	299	212 33 41.0	33 11.7	149.77	− 0.31	9.9972310	-49.8	9 41 4.14
26	300	213 33 36.2	33 6.7	149.84	0.38	9.9971116	49.6	9 37 8.23
27	301	214 33 33.1	33 3.4	149.90	0.42	9.9969928	49.4	9 33 12.32
28	302	215 33 31.6	33 1.8	149.97	− 0.43	9.9968747	-49.0	9 29 16.41
29	303	216 33 31.6	33 1.8	150.03	0.40	9.9967574	48.6	9 25 20.50
30	304	217 33 33.3	33 3.3	150.10	0.35	9.9966412	48.1	9 21 24.60
31	305	218 33 36.6	33 6.4	150.17	0.28	9.9965264	47.6	9 17 28.69
32	306	219 33 41.6	33 11.2	150.24	− 0.18	9.9964130	-47.0	9 13 32.78

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 1ᵈ.0.

Diff. for 1 Hour,
— 9ˢ.8296.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 39.6	15 47.3	57 21.7	+2.34	57 50.1	+2.39	8 11.2	2.24	10.5
2	15 55.2	16 2.9	58 18.9	2.40	58 47.5	2.35	9 4.4	2.18	11.5
3	16 10.5	16 17.6	59 15.2	2.25	59 41.4	2.10	9 56.2	2.13	12.5
4	16 24.2	16 29.9	60 5.4	+1.88	60 26.5	+1.61	10 47.1	2.10	13.5
5	16 34.7	16 38.3	60 44.0	1.29	60 57.4	0.94	11 37.9	2.12	14.5
6	16 40.7	16 41.9	61 6.3	+0.55	61 10.5	+0.15	12 29.8	2.19	15.5
7	16 41.7	16 40 3	61 9.9	−0.25	61 4.6	−0.63	13 23.9	2.31	16.5
8	16 37.6	16 33.9	60 54.9	0.97	60 41.3	1.29	14 21.0	2.43	17.5
9	16 29.2	16 23.8	60 24.1	1.56	60 4.1	1.76	15 21.0	2.53	18.5
10	16 17.8	16 11.3	59 41.9	−1.92	59 18.1	−2.03	16 22.6	2.56	19.5
11	16 4.6	15 57.7	58 53.4	2.09	58 28.2	2.10	17 23.8	2.50	20.5
12	15 50.9	15 44.2	58 3.1	2.08	57 38.5	2.02	18 22.3	2.34	21.5
13	15 37.7	15 31.5	57 14.7	−1.95	56 51.9	−1.85	19 16.7	2.16	22.5
14	15 25.6	15 20.1	56 30.4	1.74	56 10.3	1.62	20 6.5	1.99	23.5
15	15 15.1	15 10.4	55 51.7	1.50	55 34.5	1.37	20 52.2	1.83	24.5
16	15 6.2	15 2.3	55 18.9	−1.25	55 4.7	−1.13	21 34.9	1.72	25.5
17	14 58.8	14 55.8	54 52.0	1.00	54 40.7	0.89	22 15.5	1.66	26.5
18	14 53.1	14 50.7	54 30.8	0.78	54 22.1	0 67	22 55.2	1.64	27.5
19	14 48.7	14 47.0	54 14.7	−0.57	54 8.6	−0.46	23 34.9	1.66	28.5
20	14 45.7	14 44.7	54 3.7	0.36	54 0.0	0.26	δ		29.5
21	14 44.0	14 43.7	53 57.6	−0.16	53 56.4	−0.04	0 15.7	1.73	0.7
22	14 43.8	14 44.2	53 56.7	+0.08	53 58.3	+0.21	0 58.3	1.82	1.7
23	14 45.1	14 46.4	54 1.5	0.34	54 6.4	0.48	1 43.4	1.93	2.7
24	14 48.2	14 50.5	54 12.9	0.62	54 21.3	0.78	2 31.4	2.04	3.7
25	14 53.2	14 56.6	54 31.5	+0.94	54 43.8	+1.11	3 22.0	2.14	4.7
26	15 0.5	15 5.0	54 58.2	1.29	55 14.6	1.46	4 14.5	2.21	5.7
27	15 10.0	15 15.7	55 33.2	1.64	55 53.8	1.80	5 8.0	2.22	6.7
28	15 21.8	15 28.5	56 16.4	+1.96	56 40.9	+2.11	6 1.1	2.18	7.7
29	15 35.6	15 43.0	57 7.0	2.23	57 34.4	2.33	6 53.0	2.13	8.7
30	15 50.8	15 58.6	58 2.8	2.39	58 31.7	2.40	7 43.6	2.08	9.7
31	16 6.5	16 14.1	59 0.5	2.37	59 28.6	2.29	8 33.1	2.05	10.7
32	16 21.4	16 28.2	59 55.4	+2.15	60 20.1	+1.94	9 22.6	2.06	11.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
	SATURDAY 1.					MONDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	20 36 6.93	2.3442	S.24 1 17.4	8.187	0	22 26 15.10	2.2424	S.14 54 13.5	14.251
1	20 38 27.53	2.3425	23 53 1.8	8.332	1	22 28 29.59	2.2406	14 39 55.4	14.352
2	20 40 48.03	2.3408	23 44 37.6	8.476	2	22 30 43.97	2.2387	14 25 31.3	14.452
3	20 43 8.43	2.3391	23 36 4.7	8.621	3	22 32 58.23	2.2368	14 11 1.2	14.550
4	20 45 28.72	2.3373	23 27 23.1	8.764	4	22 35 12.38	2.2350	13 56 25.3	14.646
5	20 47 48.90	2.3355	23 18 33.0	8.907	5	22 37 26.43	2.2333	13 41 43.7	14.740
6	20 50 8.98	2.3337	23 9 34.3	9.050	6	22 39 40.38	2.2316	13 26 56.5	14.834
7	20 52 28.94	2.3317	23 0 27.0	9.192	7	22 41 54.22	2.2298	13 12 3.7	14.927
8	20 54 48.78	2.3297	22 51 11.3	9.332	8	22 44 7.96	2.2281	12 57 5.3	15.018
9	20 57 8.50	2.3277	22 41 47.2	9.472	9	22 46 21.60	2.2265	12 42 1.5	15.107
10	20 59 28.10	2.3257	22 32 14.7	9.612	10	22 48 35.14	2.2249	12 26 52.4	15.196
11	21 1 47.58	2.3237	22 22 33.8	9.751	11	22 50 48.59	2.2234	12 11 38.0	15.283
12	21 4 6.94	2.3216	22 12 44.6	9.889	12	22 53 1.95	2.2219	11 56 18.5	15.368
13	21 6 26.17	2.3194	22 2 47.1	10.027	13	22 55 15.22	2.2205	11 40 53.9	15.452
14	21 8 45.27	2.3173	21 52 41.4	10.163	14	22 57 28.41	2.2192	11 25 24.3	15 534
15	21 11 4.25	2.3152	21 42 27.5	10.299	15	22 59 41.52	2.2178	11 9 49.8	15.615
16	21 13 23.10	2.3131	21 32 5.5	10.435	16	23 1 54.55	2.2165	10 54 10.5	15.694
17	21 15 41.82	2.3108	21 21 35.3	10.570	17	23 4 7.50	2.2152	10 38 26.5	15.772
18	21 18 0.40	2.3086	21 10 57.1	10.703	18	23 6 20.38	2.2141	10 22 37.8	15.849
19	21 20 18.85	2.3064	21 0 10.9	10.836	19	23 8 33.19	2.2130	10 6 44.6	15.923
20	21 22 37.17	2.3042	20 49 16.8	10.968	20	23 10 45.94	2.2119	9 50 47.0	15.997
21	21 24 55.35	2.3019	20 38 14.8	11.099	21	23 12 58.62	2.2108	9 34 45.0	16.068
22	21 27 13.40	2.2996	20 27 4.9	11.229	22	23 15 11.24	2.2099	9 18 38.8	16.138
23	21 29 31.31	2.2973	S.20 15 47.3	11.358	23	23 17 23.81	2.2091	S. 9 2 28.4	16.207
	SUNDAY 2.					TUESDAY 4.			
0	21 31 49.08	2.2950	S.20 4 22.0	11.486	0	23 19 36.33	2.2083	S. 8 46 13.9	16.275
1	21 34 6.71	2.2927	19 52 49.0	11.614	1	23 21 48.80	2.2075	8 29 55.4	16.340
2	21 36 24.21	2.2905	19 41 8.3	11.741	2	23 24 1.23	2.2067	8 13 33.1	16.403
3	21 38 41.57	2.2882	19 29 20.1	11.866	3	23 26 13.61	2.2060	7 57 7.0	16.466
4	21 40 58.79	2.2859	19 17 24.4	11.990	4	23 28 25.95	2.2054	7 40 37.2	16.526
5	21 43 15.87	2.2836	19 5 21.3	12.113	5	23 30 38.26	2.2050	7 24 3.9	16.584
6	21 45 32.82	2.2813	18 53 10.8	12.236	6	23 32 50.55	2.2046	7 7 27.1	16.642
7	21 47 49.63	2.2790	18 40 53.0	12.357	7	23 35 2.81	2.2042	6 50 46.9	16.697
8	21 50 6.30	2.2767	18 28 27.9	12.478	8	23 37 15.05	2.2038	6 34 3.4	16.751
9	21 52 22.84	2.2745	18 15 55.6	12.597	9	23 39 27.27	2.2036	6 17 16.8	16.803
10	21 54 39.24	2.2722	18 3 16.2	12.716	10	23 41 39.48	2.2034	6 0 27.1	16.853
11	21 56 55.50	2.2699	17 50 29.7	12.833	11	23 43 51.68	2.2032	5 43 34.4	16.902
12	21 59 11.63	2.2677	17 37 36.2	12.949	12	23 46 3.87	2.2032	5 26 38.9	16.948
13	22 1 27.63	2.2655	17 24 35.8	13.064	13	23 48 16.06	2.2032	5 9 40.6	16.994
14	22 3 43.49	2.2633	17 11 28.5	13.178	14	23 50 28.25	2.2033	4 52 39.6	17.037
15	22 5 59.22	2.2611	16 58 14.4	13.291	15	23 52 40.45	2.2034	4 35 36.1	17.078
16	22 8 14.82	2.2589	16 44 53.6	13.402	16	23 54 52.66	2.2037	4 18 30.2	17.118
17	22 10 30.29	2.2568	16 31 26.2	13.512	17	23 57 4.89	2.2040	4 1 21.9	17.157
18	22 12 45.64	2.2547	16 17 52.1	13.622	18	23 59 17.14	2.2043	3 44 11.4	17.193
19	22 15 0.86	2.2526	16 4 11.5	13.730	19	0 1 29.41	2.2047	3 26 58.8	17.227
20	22 17 15.95	2.2505	15 50 24.5	13.837	20	0 3 41.71	2.2052	3 9 44.2	17.259
21	22 19 30.92	2.2485	15 36 31.1	13.943	21	0 5 54.04	2.2058	2 52 27.7	17.290
22	22 21 45.77	2.2465	15 22 31.4	14.047	22	0 8 6.41	2.2065	2 35 9.4	17.319
23	22 24 0.50	2.2444	15 8 25.5	14.149	23	0 10 18.82	2.2073	2 17 49.4	17.346
24	22 26 15.10	2.2424	S.14 54 13.5	14.251	24	0 12 31.28	2.2081	S. 2 0 27.9	17.371

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 12 31.28	2.2081	S. 2 0 27.9	17.371
1	0 14 43.79	2.2089	1 43 4.9	17.394
2	0 16 56.35	2.2098	1 25 40.6	17.415
3	0 19 8.97	2.2109	1 8 15.1	17.435
4	0 21 21.66	2.2120	0 50 48.4	17.452
5	0 23 34.41	2.2131	0 33 20.8	17.468
6	0 25 47.23	2.2143	S. 0 15 52.3	17.482
7	0 28 0.13	2.2157	N. 0 1 37.0	17.493
8	0 30 13.12	2.2171	0 19 6.9	17.503
9	0 32 26.19	2.2186	0 36 37.4	17.511
10	0 34 39.35	2.2202	0 54 8.3	17.517
11	0 36 52.61	2.2218	1 11 39.4	17.520
12	0 39 5.96	2.2234	1 29 10.7	17.522
13	0 41 19.42	2.2252	1 46 42.1	17.522
14	0 43 32.99	2.2271	2 4 13.4	17.520
15	0 45 46.67	2.2290	2 21 44.5	17.516
16	0 48 0.47	2.2310	2 39 15.3	17.510
17	0 50 14.39	2.2331	2 56 45.7	17.502
18	0 52 28.44	2.2353	3 14 15.5	17.491
19	0 54 42.62	2.2375	3 31 44.6	17.479
20	0 56 56.94	2.2397	3 49 13.0	17.466
21	0 59 11.39	2.2421	4 6 40.5	17.449
22	1 1 25.99	2.2446	4 24 6.9	17.431
23	1 3 40.74	2.2472	N. 4 41 32.2	17.411

THURSDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	1 5 55.65	2.2498	N. 4 58 56.2	17.388
1	1 8 10.71	2.2524	5 16 18.8	17.364
2	1 10 25.94	2.2551	5 33 39.9	17.337
3	1 12 41.33	2.2579	5 50 59.3	17.308
4	1 14 56.89	2.2608	6 8 16.9	17.277
5	1 17 12.63	2.2638	6 25 32.6	17.245
6	1 19 28.54	2.2668	6 42 46.3	17.210
7	1 21 44.64	2.2699	6 59 57.8	17.173
8	1 24 0.93	2.2731	7 17 7.0	17.134
9	1 26 17.41	2.2763	7 34 13.9	17.093
10	1 28 34.08	2.2796	7 51 18.2	17.050
11	1 30 50.96	2.2830	8 8 19.9	17.005
12	1 33 8.04	2.2864	8 25 18.8	16.957
13	1 35 25.33	2.2899	8 42 14.8	16.907
14	1 37 42.83	2.2934	8 59 7.7	16.856
15	1 40 0.54	2.2970	9 15 57.5	16.802
16	1 42 18.47	2.3008	9 32 44.0	16.747
17	1 44 36.63	2.3046	9 49 27.1	16.689
18	1 46 55.02	2.3084	10 6 6.7	16.629
19	1 49 13.64	2.3122	10 22 42.6	16.567
20	1 51 32.49	2.3161	10 39 14.7	16.503
21	1 53 51.57	2.3200	10 55 43.0	16.437
22	1 56 10.89	2.3241	11 12 7.2	16.368
23	1 58 30.46	2.3282	11 28 27.2	16.297
24	2 0 50.28	2.3324	N.11 44 42.9	16.225

FRIDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	2 0 50.28	2.3324	N.11 44 42.9	16.225
1	2 3 10.35	2.3366	12 0 54.2	16.151
2	2 5 30.67	2.3408	12 17 1.0	16.074
3	2 7 51.24	2.3450	12 33 3.1	15.995
4	2 10 12.07	2.3493	12 49 0.4	15.914
5	2 12 33.16	2.3537	13 4 52.8	15.831
6	2 14 54.52	2.3582	13 20 40.1	15.745
7	2 17 16.14	2.3626	13 36 22.2	15.658
8	2 19 38.03	2.3672	13 51 59.1	15.570
9	2 22 0.20	2.3717	14 7 30.6	15.478
10	2 24 22.64	2.3763	14 22 56.5	15.385
11	2 26 45.36	2.3809	14 38 16.8	15.290
12	2 29 8.35	2.3855	14 53 31.3	15.192
13	2 31 31.62	2.3902	15 8 39.9	15.093
14	2 33 55.17	2.3949	15 23 42.5	14.992
15	2 36 19.01	2.3997	15 38 38.9	14.888
16	2 38 43.13	2.4044	15 53 29.0	14.783
17	2 41 7.54	2.4092	16 8 12.8	14.676
18	2 43 32.23	2.4139	16 22 50.1	14.566
19	2 45 57.21	2.4187	16 37 20.7	14.454
20	2 48 22.48	2.4236	16 51 44.6	14.342
21	2 50 48.04	2.4284	17 6 1.7	14.227
22	2 53 13.89	2.4332	17 20 11.8	14.109
23	2 55 40.03	2.4381	N.17 34 14.8	13.990

SATURDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 58 6.46	2.4429	N.17 48 10.6	13.869
1	3 0 33.18	2.4478	18 1 59.1	13.747
2	3 3 0.19	2.4527	18 15 40.2	13.622
3	3 5 27.50	2.4576	18 29 13.7	13.495
4	3 7 55.10	2.4624	18 42 39.6	13.367
5	3 10 22.99	2.4672	18 55 57.7	13.237
6	3 12 51.17	2.4721	19 9 8.0	13.105
7	3 15 19.64	2.4769	19 22 10.3	12.971
8	3 17 48.40	2.4817	19 35 4.5	12.835
9	3 20 17.45	2.4865	19 47 50.5	12.697
10	3 22 46.78	2.4912	20 0 28.2	12.558
11	3 25 16.40	2.4960	20 12 57.5	12.418
12	3 27 46.30	2.5007	20 25 18.4	12.277
13	3 30 16.49	2.5054	20 37 30.7	12.133
14	3 32 46.95	2.5100	20 49 34.3	11.986
15	3 35 17.69	2.5147	21 1 29.0	11.838
16	3 37 48.71	2.5193	21 13 14.8	11.689
17	3 40 20.00	2.5238	21 24 51.7	11.539
18	3 42 51.56	2.5283	21 36 19.5	11.387
19	3 45 23.39	2.5327	21 47 38.1	11.233
20	3 47 55.48	2.5370	21 58 47.5	11.078
21	3 50 27.83	2.5413	22 9 47.5	10.921
22	3 53 0.44	2.5456	22 20 38.0	10.763
23	3 55 33.30	2.5498	22 31 19.0	10.604
24	3 58 6.42	2.5540	N.22 41 50.5	10.444

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 9.					**TUESDAY 11.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	3 58 6.42	2.5540	N.22 41 50.5	10.444	0	6 3 34.95	2.6253	N.27 38 57.5	1.727
1	4 0 39.78	2.5580	22 52 12.3	10.281	1	6 6 12.41	2.6234	27 40 35.5	1.539
2	4 3 13.38	2.5621	23 2 24.2	10.116	2	6 8 49.76	2.6214	27 42 2.2	1.352
3	4 5 47.23	2.5661	23 12 26.2	9.951	3	6 11 26.98	2.6192	27 43 17.7	1.166
4	4 8 21.31	2.5699	23 22 18.3	9.786	4	6 14 4.06	2.6168	27 44 22.1	0.980
5	4 10 55.62	2.5737	23 32 0.5	9.619	5	6 16 41.00	2.6143	27 45 15.3	0.794
6	4 13 30.15	2.5773	23 41 32.6	9.450	6	6 19 17.78	2.6117	27 45 57.4	0.609
7	4 16 4.90	2.5809	23 50 54.5	9.280	7	6 21 54.40	2.6089	27 46 28.4	0.425
8	4 18 39.86	2.5844	24 0 6.2	9.109	8	6 24 30.85	2.6059	27 46 48.4	0.241
9	4 21 15.03	2.5879	24 9 7.6	8.937	9	6 27 7.11	2.6028	27 46 57.3	+ 0.057
10	4 23 50.41	2.5912	24 17 58.7	8.764	10	6 29 43.18	2.5996	27 46 55.2	− 0.125
11	4 26 25.98	2.5944	24 26 39.3	8.589	11	6 32 19.06	2.5963	27 46 42.3	0.306
12	4 29 1.74	2.5976	24 35 9.4	8.413	12	6 34 54.74	2.5928	27 46 18.5	0.487
13	4 31 37.69	2.6007	24 43 28.9	8.237	13	6 37 30.20	2.5891	27 45 43.9	0.668
14	4 34 13.82	2.6036	24 51 37.9	8.061	14	6 40 5.43	2.5853	27 44 58.4	0.848
15	4 36 50.12	2.6063	24 59 36.2	7.883	15	6 42 40.44	2.5815	27 44 2.1	1.027
16	4 39 26.58	2.6090	25 7 23.8	7.703	16	6 45 15.21	2.5774	27 42 55.1	1.205
17	4 42 3.20	2.6117	25 15 0.6	7.523	17	6 47 49.73	2.5732	27 41 37.5	1.382
18	4 44 39.98	2.6142	25 22 26.6	7.342	18	6 50 24.00	2.5690	27 40 9.3	1.557
19	4 47 16.90	2.6165	25 29 41.7	7.161	19	6 52 58.01	2.5646	27 38 30.6	1.732
20	4 49 53.96	2.6187	25 36 45.9	6.979	20	6 55 31.75	2.5600	27 36 41.4	1.907
21	4 52 31.15	2.6209	25 43 39.2	6.797	21	6 58 5.21	2.5553	27 34 41.7	2.081
22	4 55 8.47	2.6229	25 50 21.5	6.613	22	7 0 38.39	2.5506	27 32 31.7	2.253
23	4 57 45.90	2.6247	N.25 56 52.7	6.428	23	7 3 11.28	2.5457	N.27 30 11.4	2.424
	MONDAY 10.					**WEDNESDAY 12.**			
0	5 0 23.44	2.6265	N.26 3 12.8	6.243	0	7 5 43.87	2.5407	N.27 27 40.8	2.595
1	5 3 1.08	2.6281	26 9 21.8	6.058	1	7 8 16.16	2.5356	27 25 0.0	2.764
2	5 5 38.81	2.6296	26 15 19.7	5.872	2	7 10 48.14	2.5303	27 22 9.1	2.932
3	5 8 16.63	2.6309	26 21 6.4	5.685	3	7 13 19.80	2.5249	27 19 8.2	3.098
4	5 10 54.52	2.6321	26 26 41.9	5.498	4	7 15 51.13	2.5195	27 15 57.3	3.264
5	5 13 32.48	2.6331	26 32 6.2	5.311	5	7 18 22.14	2.5141	27 12 36.5	3.429
6	5 16 10.49	2.6339	26 37 19.2	5.123	6	7 20 52.82	2.5085	27 9 5.8	3.593
7	5 18 48.55	2.6347	26 42 20.9	4.935	7	7 23 23.16	2.5027	27 5 25.3	3.755
8	5 21 26.66	2.6355	26 47 11.4	4.747	8	7 25 53.15	2.4969	27 1 35.2	3.916
9	5 24 4.81	2.6360	26 51 50.6	4.558	9	7 28 22.79	2.4911	26 57 35.4	4.077
10	5 26 42.98	2.6363	26 56 18.4	4.369	10	7 30 52.08	2.4851	26 53 26.0	4.235
11	5 29 21.17	2.6365	27 0 34.9	4.181	11	7 33 21.00	2.4789	26 49 7.2	4.392
12	5 31 59.36	2.6365	27 4 40.1	3.992	12	7 35 49.55	2.4728	26 44 39.0	4.548
13	5 34 37.55	2.6364	27 8 33.9	3.802	13	7 38 17.73	2.4666	26 40 1.4	4.703
14	5 37 15.73	2.6362	27 12 16.4	3.613	14	7 40 45.54	2.4603	26 35 14.6	4.857
15	5 39 53.89	2.6357	27 15 47.5	3.424	15	7 43 12.97	2.4539	26 30 18.6	5.009
16	5 42 32.02	2.6352	27 19 7.3	3.235	16	7 45 40.01	2.4475	26 25 13.5	5.160
17	5 45 10.11	2.6345	27 22 15.7	3.046	17	7 48 6.67	2.4411	26 19 59.4	5.310
18	5 47 48.16	2.6337	27 25 12.8	2.857	18	7 50 32.94	2.4345	26 14 36.3	5.458
19	5 50 26.15	2.6327	27 27 58.5	2.668	19	7 52 58.81	2.4278	26 9 4.4	5.605
20	5 53 4.08	2.6315	27 30 32.9	2.479	20	7 55 24.28	2.4211	26 3 23.7	5.751
21	5 55 41.93	2.6302	27 32 56.0	2.291	21	7 57 49.35	2.4144	25 57 34.3	5.895
22	5 58 19.70	2.6287	27 35 7.8	2.102	22	8 0 14.01	2.4077	25 51 36.3	6.038
23	6 0 57.38	2.6271	27 37 8.3	1.914	23	8 2 38.27	2.4009	25 45 29.7	6.180
24	6 3 34.95	2.6253	N.27 38 57.5	1.727	24	8 5 2.12	2.3940	N.25 39 14.7	6.320

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	8 5 2.12	2.3940	N.25 39 14.7	6.320
1	8 7 25.55	2.3871	25 32 51.3	6.458
2	8 9 48.57	2.3802	25 26 19.7	6.595
3	8 12 11.17	2.3732	25 19 39.9	6.731
4	8 14 33.35	2.3662	25 12 52.0	6.866
5	8 16 55.11	2.3591	25 5 56.0	6.999
6	8 19 16.44	2.3520	24 58 52.1	7.131
7	8 21 37.35	2.3449	24 51 40.3	7.261
8	8 23 57.83	2.3377	24 44 20.8	7.389
9	8 26 17.88	2.3306	24 36 53.6	7.517
10	8 28 37.50	2.3235	24 29 18.8	7.643
11	8 30 56.70	2.3164	24 21 36.5	7.768
12	8 33 15.47	2.3092	24 13 46.7	7.891
13	8 35 33.81	2.3020	24 5 49.6	8.012
14	8 37 51.71	2.2948	23 57 45.2	8.132
15	8 40 9.18	2.2876	23 49 33.7	8.251
16	8 42 26.22	2.2804	23 41 15.1	8.368
17	8 44 42.82	2.2732	23 32 49.5	8.484
18	8 46 59.00	2.2661	23 24 17.0	8.599
19	8 49 14.75	2.2589	23 15 37.6	8.712
20	8 51 30.06	2.2516	23 6 51.5	8.823
21	8 53 44.94	2.2444	22 57 58.8	8.933
22	8 55 59.39	2.2372	22 48 59.5	9.043
23	8 58 13.41	2.2301	N.22 39 53.6	9.152

FRIDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	9 0 27.00	2.2230	N.22 30 41.3	9.258
1	9 2 40.17	2.2159	22 21 22.6	9.362
2	9 4 52.91	2.2088	22 11 57.8	9.464
3	9 7 5.22	2.2017	22 2 26.9	9.566
4	9 9 17.11	2.1947	21 52 49.9	9.667
5	9 11 28.58	2.1877	21 43 6.8	9.767
6	9 13 39.63	2.1807	21 33 17.8	9.865
7	9 15 50.26	2.1737	21 23 23.0	9.962
8	9 18 0.47	2.1668	21 13 22.4	10.057
9	9 20 10.27	2.1599	21 3 16.2	10.150
10	9 22 19.66	2.1530	20 53 4.4	10.243
11	9 24 28.63	2.1461	20 42 47.0	10.335
12	9 26 37.19	2.1393	20 32 24.2	10.424
13	9 28 45.35	2.1326	20 21 56.1	10.512
14	9 30 53.11	2.1259	20 11 22.7	10.599
15	9 33 0.46	2.1193	20 0 44.2	10.684
16	9 35 7.41	2.1126	19 50 0.6	10.769
17	9 37 13.97	2.1060	19 39 11.9	10.854
18	9 39 20.13	2.0994	19 28 18.1	10.937
19	9 41 25.90	2.0930	19 17 19.5	11.017
20	9 43 31.29	2.0866	19 6 16.1	11.096
21	9 45 36.29	2.0801	18 55 8.0	11.174
22	9 47 40.90	2.0738	18 43 55.2	11.251
23	9 49 45.14	2.0675	18 32 37.9	11.326
24	9 51 49.00	2.0613	N.18 21 16.1	11.401

SATURDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	9 51 49.00	2.0613	N.18 21 16.1	11.401
1	9 53 52.49	2.0551	18 9 49.8	11.474
2	9 55 55.61	2.0489	17 58 19.2	11.546
3	9 57 58.36	2.0428	17 46 44.3	11.617
4	10 0 0.75	2.0368	17 35 5.2	11.687
5	10 2 2.78	2.0308	17 23 21.9	11.756
6	10 4 4.45	2.0249	17 11 34.5	11.823
7	10 6 5.77	2.0191	16 59 43.1	11.889
8	10 8 6.74	2.0133	16 47 47.8	11.953
9	10 10 7.36	2.0075	16 35 48.7	12.017
10	10 12 7.64	2.0018	16 23 45.8	12.080
11	10 14 7.58	1.9962	16 11 39.1	12.142
12	10 16 7.19	1.9907	15 59 28.8	12.202
13	10 18 6.47	1.9852	15 47 14.9	12.261
14	10 20 5.42	1.9797	15 34 57.5	12.318
15	10 22 4.04	1.9743	15 22 36.7	12.375
16	10 24 2.34	1.9691	15 10 12.5	12.432
17	10 26 0.33	1.9640	14 57 44.9	12.488
18	10 27 58.02	1.9589	14 45 14.0	12.542
19	10 29 55.40	1.9537	14 32 39.9	12.593
20	10 31 52.47	1.9486	14 20 2.8	12.644
21	10 33 49.23	1.9436	14 7 22.6	12.695
22	10 35 45.70	1.9387	13 54 39.4	12.745
23	10 37 41.88	1.9339	N.13 41 53.2	12.793

SUNDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 39 37.77	1.9291	N.13 29 4.2	12.840
1	10 41 33.37	1.9244	13 16 12.4	12.887
2	10 43 28.70	1.9198	13 3 17.8	12.932
3	10 45 23.75	1.9152	12 50 20.5	12.977
4	10 47 18.53	1.9107	12 37 20.6	13.020
5	10 49 13.04	1.9063	12 24 18.1	13.062
6	10 51 7.29	1.9020	12 11 13.2	13.103
7	10 53 1.28	1.8977	11 58 5.8	13.143
8	10 54 55.01	1.8934	11 44 56.0	13.182
9	10 56 48.49	1.8893	11 31 43.9	13.221
10	10 58 41.73	1.8853	11 18 29.5	13.258
11	11 0 34.73	1.8812	11 5 12.9	13.295
12	11 2 27.48	1.8772	10 51 54.1	13.331
13	11 4 20.00	1.8734	10 38 33.2	13.365
14	11 6 12.29	1.8696	10 25 10.3	13.398
15	11 8 4.36	1.8659	10 11 45.5	13.430
16	11 9 56.20	1.8623	9 58 18.7	13.462
17	11 11 47.83	1.8587	9 44 50.0	13.492
18	11 13 39.24	1.8551	9 31 19.6	13.522
19	11 15 30.44	1.8517	9 17 47.4	13.552
20	11 17 21.44	1.8484	9 4 13.4	13.580
21	11 19 12.25	1.8451	8 50 37.8	13.607
22	11 21 2.86	1.8418	8 37 0.6	13.632
23	11 22 53.27	1.8386	8 23 21.9	13.657
24	11 24 43.49	1.8355	N. 8 9 41.7	13.682

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 24 43.49	1.8355	N. 8 9 41.7	13.682
1	11 26 33.53	1.8325	7 56 0.1	13.705
2	11 28 23.39	1.8296	7 42 17.1	13.728
3	11 30 13.08	1.8267	7 28 32.7	13.751
4	11 32 2.59	1 8239	7 14 47.0	13.772
5	11 33 51.94	1.8212	7 1 0.1	13.791
6	11 35 41.13	1.8185	6 47 12.1	13.810
7	11 37 30.16	1.8159	6 33 22.9	13.828
8	11 39 19.04	1.8133	6 19 32.7	13.845
9	11 41 7.76	1.8108	6 5 41.5	13.862
10	11 42 56.31	1.8085	5 51 49.3	13.878
11	11 44 44.78	1.8062	5 37 56.1	13.893
12	11 46 33.08	1.8039	5 24 2.1	13.907
13	11 48 21.25	1.8017	5 10 7.3	13.920
14	11 50 9.29	1.7996	4 56 11.7	13.932
15	11 51 57.20	1.7975	4 42 15.4	13.943
16	11 53 44.99	1.7956	4 28 18.5	13.954
17	11 55 32.67	1.7937	4 14 20.9	13 965
18	11 57 20.24	1.7919	4 0 22.7	13.974
19	11 59 7.70	1.7901	3 46 24.0	13.982
20	12 0 55.05	1.7883	3 32 24.9	13.989
21	12 2 42.30	1.7867	3 18 25.3	13.997
22	12 4 29.46	1.7852	3 4 25.3	14.002
23	12 6 16.53	1.7837	N. 2 50 25.0	14.007

TUESDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 8 3.50	1.7822	N. 2 36 24.5	14.011
1	12 9 50.39	1.7809	2 22 23.7	14.014
2	12 11 37.21	1.7796	2 8 22.8	14.017
3	12 13 23.95	1.7784	1 54 21.7	14.019
4	12 15 10.62	1.7773	1 40 20.5	14.020
5	12 16 57.23	1.7762	1 26 19.3	14.021
6	12 18 43.77	1.7752	1 12 18.0	14.021
7	12 20 30.25	1.7742	0 58 16.8	14.019
8	12 22 16.68	1.7734	0 44 15.7	14.016
9	12 24 3.06	1.7726	0 30 14.8	14.013
10	12 25 49.39	1.7718	0 16 14.1	14.010
11	12 27 35.68	1.7711	N. 0 2 13.6	14.006
12	12 29 21.93	1.7705	S. 0 11 46.6	14.001
13	12 31 8.14	1.7699	0 25 46.5	13.995
14	12 32 54.32	1.7695	0 39 46.0	13.988
15	12 34 40.48	1.7692	0 53 45.0	13.980
16	12 36 26.62	1.7688	1 7 43.6	13.972
17	12 38 12.74	1.7685	1 21 41.7	13.963
18	12 39 58.84	1.7682	1 35 39.2	13.953
19	12 41 44.93	1.7681	1 49 36.1	13.943
20	12 43 31.01	1.7680	2 3 32.3	13.932
21	12 45 17.09	1.7680	2 17 27.9	13.920
22	12 47 3.17	1.7681	2 31 22.7	13.907
23	12 48 49.26	1.7682	2 45 16.7	13.893
24	12 50 35.35	1.7683	S. 2 59 9.8	13.878

WEDNESDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 50 35.35	1.7683	S. 2 59 9.8	13.878
1	12 52 21.45	1.7685	3 13 2.1	13.863
2	12 54 7.57	1.7689	3 26 53.4	13.847
3	12 55 53.72	1.7693	3 40 43.7	13.830
4	12 57 39.89	1.7697	3 54 33.0	13.813
5	12 59 26.08	1.7701	4 8 21.2	13.795
6	13 1 12.30	1.7707	4 22 8.4	13.777
7	13 2 58.56	1.7713	4 35 54.4	13.757
8	13 4 44.86	1.7719	4 49 39.2	13.736
9	13 6 31.19	1.7726	5 3 22.7	13.714
10	13 8 17.57	1.7735	5 17 4.9	13.692
11	13 10 4.01	1.7744	5 30 45.8	13.670
12	13 11 50.50	1.7753	5 44 25.3	13.646
13	13 13 37.04	1.7763	5 58 3.3	13.622
14	13 15 23.65	1.7773	6 11 39.9	13.597
15	13 17 10.32	1.7784	6 25 15.0	13.571
16	13 18 57.06	1.7796	6 38 48.5	13.544
17	13 20 43.87	1.7808	6 52 20.3	13.517
18	13 22 30.76	1.7821	7 5 50.5	13.489
19	13 24 17.73	1.7835	7 19 19.0	13.460
20	13 26 4.78	1.7849	7 32 45.7	13.430
21	13 27 51.92	1.7864	7 46 10.6	13.399
22	13 29 39.15	1.7879	7 59 33.6	13.368
23	13 31 26.47	1.7894	S. 8 12 54.7	13.336

THURSDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 33 13.88	1.7910	S. 8 26 13.9	13.303
1	13 35 1.39	1.7928	8 39 31.1	13.269
2	13 36 49.01	1.7946	8 52 46.2	13.235
3	13 38 36.74	1.7964	9 5 59.3	13.201
4	13 40 24.58	1.7983	9 19 10.3	13.164
5	13 42 12.54	1.8002	9 32 19.0	13.127
6	13 44 0.61	1.8022	9 45 25.5	13.089
7	13 45 48.80	1.8043	9 58 29.7	13.051
8	13 47 37.12	1.8064	10 11 31.6	13.012
9	13 49 25.57	1.8085	10 24 31.2	12.973
10	13 51 14.14	1.8107	10 37 28.4	12.932
11	13 53 2.85	1.8130	10 50 23.1	12.890
12	13 54 51.70	1.8153	11 3 15.2	12.848
13	13 56 40.69	1.8177	11 16 4.8	12.805
14	13 58 29.82	1.8201	11 28 51.8	12.762
15	14 0 19.10	1.8226	11 41 36.2	12.717
16	14 2 8.53	1.8252	11 54 17.8	12.671
17	14 3 58.12	1.8278	12 6 56.7	12.625
18	14 5 47.86	1.8304	12 19 32.8	12.578
19	14 7 37.76	1.8331	12 32 6.1	12.530
20	14 9 27.83	1.8358	12 44 36.4	12.481
21	14 11 18.06	1.8386	12 57 3.8	12.432
22	14 13 8.46	1.8414	13 9 28.2	12.382
23	14 14 59.03	1.8443	13 21 49.6	12.332
24	14 16 49.78	1.8472	S. 13 34 8.0	12.280

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 16 49.78	1.8472	S.13 34 8.0	12.280
1	14 18 40.70	1.8502	13 46 23.2	12.227
2	14 20 31.81	1.8533	13 58 35.2	12.172
3	14 22 23.10	1.8564	14 10 43.9	12.117
4	14 24 14.58	1.8596	14 22 49.3	12.062
5	14 26 6.25	1.8627	14 34 51.4	12.007
6	14 27 58.10	1.8659	14 46 50.2	11.951
7	14 29 50.15	1.8692	14 58 45.5	11.893
8	14 31 42.40	1.8725	15 10 37.3	11.834
9	14 33 34.85	1.8758	15 22 25.6	11.775
10	14 35 27.50	1.8792	15 34 10.3	11.715
11	14 37 20.36	1.8827	15 45 51.4	11.654
12	14 39 13.43	1.8862	15 57 28.8	11.592
13	14 41 6.71	1.8897	16 9 2.5	11.530
14	14 43 0.20	1.8933	16 20 32.4	11.466
15	14 44 53.91	1.8969	16 31 58.4	11.401
16	14 46 47.83	1.9006	16 43 20.5	11.336
17	14 48 41.98	1.9043	16 54 38.7	11.271
18	14 50 36.35	1.9081	17 5 53.0	11.204
19	14 52 30.95	1.9118	17 17 3.2	11.136
20	14 54 25.77	1.9156	17 28 9.3	11.067
21	14 56 20.82	1.9194	17 39 11.2	10.997
22	14 58 16.10	1.9233	17 50 8.9	10.927
23	15 0 11.62	1.9272	S.18 1 2.5	10.857

SATURDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 2 7.37	1.9312	S.18 11 51.8	10.785
1	15 4 3.36	1.9352	18 22 36.7	10.712
2	15 5 59.59	1.9392	18 33 17.2	10.638
3	15 7 56.07	1.9433	18 43 53.3	10.564
4	15 9 52.79	1.9473	18 54 24.9	10.488
5	15 11 49.75	1.9514	19 4 51.9	10.411
6	15 13 46.96	1.9556	19 15 14.2	10.334
7	15 15 44.42	1.9598	19 25 31.9	10.256
8	15 17 42.13	1.9640	19 35 44.9	10.177
9	15 19 40.10	1.9682	19 45 53.2	10.098
10	15 21 38.32	1.9724	19 55 56.7	10.017
11	15 23 36.79	1.9767	20 5 55.3	9.935
12	15 25 35.52	1.9810	20 15 48.9	9.853
13	15 27 34.51	1.9853	20 25 37.6	9.770
14	15 29 33.76	1.9896	20 35 21.3	9.686
15	15 31 33.26	1.9939	20 44 59.9	9.600
16	15 33 33.03	1.9983	20 54 33.3	9.514
17	15 35 33.06	2.0027	21 4 1.6	9.428
18	15 37 33.36	2.0072	21 13 24.7	9.341
19	15 39 33.92	2.0116	21 22 42.5	9.252
20	15 41 34.75	2.0160	21 31 54.9	9.162
21	15 43 35.84	2.0204	21 41 1.9	9.072
22	15 45 37.20	2.0249	21 50 3.5	8.981
23	15 47 38.83	2.0294	21 58 59.6	8.889
24	15 49 40.73	2.0339	S.22 7 50.2	8.797

SUNDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 49 40.73	2.0339	S.22 7 50.2	8.797
1	15 51 42.90	2.0384	22 16 35.2	8.703
2	15 53 45.34	2.0428	22 25 14.5	8.608
3	15 55 48.04	2.0473	22 33 48.1	8.513
4	15 57 51.02	2.0519	22 42 16.0	8.416
5	15 59 54.27	2.0564	22 50 38.0	8.318
6	16 1 57.79	2.0609	22 58 54.2	8.221
7	16 4 1.58	2.0655	23 7 4.5	8.122
8	16 6 5.65	2.0700	23 15 8.8	8.022
9	16 8 9.98	2.0744	23 23 7.1	7.922
10	16 10 14.58	2.0790	23 30 59.4	7.820
11	16 12 19.46	2.0836	23 38 45.5	7.717
12	16 14 24.61	2.0881	23 46 25.4	7.613
13	16 16 30.03	2.0926	23 53 59.1	7.509
14	16 18 35.72	2.0970	24 1 26.5	7.405
15	16 20 41.67	2.1014	24 8 47.7	7.300
16	16 22 47.89	2.1059	24 16 2.5	7.193
17	16 24 54.38	2.1104	24 23 10.8	7.085
18	16 27 1.14	2.1149	24 30 12.7	6.977
19	16 29 8.17	2.1193	24 37 8.1	6.868
20	16 31 15.46	2.1237	24 43 56.9	6.758
21	16 33 23.01	2.1280	24 50 39.0	6.647
22	16 35 30.82	2.1324	24 57 14.5	6.535
23	16 37 38.90	2.1368	S.25 3 43.2	6.423

MONDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 39 47.24	2.1411	S.25 10 5.2	6.310
1	16 41 55.84	2.1454	25 16 20.4	6.196
2	16 44 4.69	2.1497	25 22 28.7	6.081
3	16 46 13.80	2.1539	25 28 30.1	5.965
4	16 48 23.16	2.1582	25 34 24.5	5.849
5	16 50 32.78	2.1624	25 40 11.9	5.732
6	16 52 42.65	2.1666	25 45 52.3	5.614
7	16 54 52.77	2.1707	25 51 25.6	5.495
8	16 57 3.13	2.1747	25 56 51.7	5.376
9	16 59 13.74	2.1788	26 2 10.7	5.256
10	17 1 24.59	2.1828	26 7 22.4	5.134
11	17 3 35.68	2.1867	26 12 26.8	5.012
12	17 5 47.00	2.1907	26 17 23.9	4.890
13	17 7 58.56	2.1946	26 22 13.6	4.767
14	17 10 10.35	2.1985	26 26 55.9	4.643
15	17 12 22.38	2.2023	26 31 30.8	4.519
16	17 14 34.63	2.2061	26 35 58.2	4.393
17	17 16 47.11	2.2098	26 40 18.0	4.267
18	17 18 59.81	2.2135	26 44 30.2	4.140
19	17 21 12.73	2.2171	26 48 34.8	4.013
20	17 23 25.86	2.2207	26 52 31.8	3.886
21	17 25 39.21	2.2243	26 56 21.1	3.757
22	17 27 52.77	2.2277	27 0 2.6	3.627
23	17 30 6.53	2.2310	27 3 36.3	3.498
24	17 32 20.49	2.2344	S.27 7 2.3	3.368

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	17 32 20.49	2.2344	S.27 7 2.3	3.368
1	17 34 34.66	2.2377	27 10 20.4	3.236
2	17 36 49.02	2.2409	27 13 30.6	3.103
3	17 39 3.57	2.2441	27 16 32.8	2.971
4	17 41 18.31	2.2472	27 19 27.1	2.838
5	17 43 33.24	2.2503	27 22 13.4	2.705
6	17 45 48.35	2.2533	27 24 51.7	2.571
7	17 48 3.64	2.2562	27 27 21.9	2.436
8	17 50 19.10	2.2591	27 29 44.0	2.301
9	17 52 34.73	2.2619	27 31 58.0	2.165
10	17 54 50.53	2.2647	27 34 3.8	2.028
11	17 57 6.49	2.2673	27 36 1.4	1.891
12	17 59 22.61	2.2699	27 37 50.8	1.754
13	18 1 38.88	2.2724	27 39 31.9	1.617
14	18 3 55.30	2.2749	27 41 4.8	1.479
15	18 6 11.87	2.2773	27 42 29.4	1.340
16	18 8 28.58	2.2796	27 43 45.6	1.201
17	18 10 45.42	2.2818	27 44 53.5	1.062
18	18 13 2.39	2.2839	27 45 53.0	0.922
19	18 15 19.49	2.2860	27 46 44.1	0.782
20	18 17 36.71	2.2881	27 47 26.8	0.641
21	18 19 54.06	2.2901	27 48 1.0	0.499
22	18 22 11.52	2.2919	27 48 26.7	0.358
23	18 24 29.08	2.2936	S.27 48 43.9	0.216

WEDNESDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	18 26 46.75	2.2953	S.27 48 52.6	− 0.074
1	18 29 4.52	2.2970	27 48 52.8	+ 0.068
2	18 31 22.39	2.2986	27 48 44.4	0.211
3	18 33 40.35	2.3001	27 48 27.4	0.354
4	18 35 58.40	2.3014	27 48 1.9	0.497
5	18 38 16.52	2.3027	27 47 27.8	0.641
6	18 40 34.72	2.3039	27 46 45.0	0.785
7	18 42 52.99	2.3051	27 45 53.6	0.928
8	18 45 11.33	2.3062	27 44 53.6	1.072
9	18 47 29.73	2.3072	27 43 44.9	1.217
10	18 49 48.19	2.3082	27 42 27.5	1.362
11	18 52 6.71	2.3091	27 41 1.5	1.506
12	18 54 25.28	2.3098	27 39 26.8	1.651
13	18 56 43.89	2.3105	27 37 43.4	1.796
14	18 59 2.54	2.3111	27 35 51.3	1.942
15	19 1 21.22	2.3116	27 33 50.4	2.087
16	19 3 39.93	2.3120	27 31 40.9	2.231
17	19 5 58.66	2.3124	27 29 22.7	2.377
18	19 8 17.42	2.3128	27 26 55.7	2.522
19	19 10 36.20	2.3130	27 24 20.0	2.667
20	19 12 54.98	2.3131	27 21 35.6	2.812
21	19 15 13.77	2.3132	27 18 42.5	2.958
22	19 17 32.56	2.3132	27 15 40.6	3.104
23	19 19 51.35	2.3132	27 12 30.0	3.249
24	19 22 10.14	2.3131	S.27 9 10.7	3.394

THURSDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	19 22 10.14	2.3131	S.27 9 10.7	3.394
1	19 24 28.92	2.3128	27 5 42.7	3.540
2	19 26 47.68	2.3124	27 2 5.9	3.686
3	19 29 6.41	2.3120	26 58 20.4	3.831
4	19 31 25.12	2.3116	26 54 26.2	3.975
5	19 33 43.81	2.3112	26 50 23.4	4.120
6	19 36 2.47	2.3107	26 46 11.8	4.266
7	19 38 21.09	2.3100	26 41 51.5	4.410
8	19 40 39.67	2.3092	26 37 22.6	4.554
9	19 42 58.20	2.3085	26 32 45.0	4.698
10	19 45 16.69	2.3077	26 27 58.8	4.843
11	19 47 35.12	2.3068	26 23 3.9	4.987
12	19 49 53.50	2.3058	26 18 0.4	5.130
13	19 52 11.82	2.3048	26 12 48.3	5.273
14	19 54 30.08	2.3037	26 7 27.6	5.417
15	19 56 48.27	2.3026	26 1 58.3	5.560
16	19 59 6.39	2.3014	25 56 20.4	5.702
17	20 1 24.43	2.3001	25 50 34.0	5.845
18	20 3 42.40	2.2988	25 44 39.0	5.987
19	20 6 0.29	2.2974	25 38 35.5	6.129
20	20 8 18.09	2.2960	25 32 23.5	6.270
21	20 10 35.81	2.2946	25 26 3.1	6.411
22	20 12 53.44	2.2931	25 19 34.2	6.552
23	20 15 10.98	2.2915	S.25 12 56.9	6.692

FRIDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	20 17 28.42	2.2899	S.25 6 11.1	6.832
1	20 19 45.77	2.2882	24 59 17.0	6.972
2	20 22 3.01	2.2865	24 52 14.5	7.111
3	20 24 20.15	2.2847	24 45 3.7	7.249
4	20 26 37.18	2.2830	24 37 44.6	7.387
5	20 28 54.11	2.2812	24 30 17.2	7.525
6	20 31 10.93	2.2793	24 22 41.6	7.663
7	20 33 27.63	2.2774	24 14 57.7	7.800
8	20 35 44.22	2.2756	24 7 5.6	7.936
9	20 38 0.70	2.2737	23 59 5.4	8.071
10	20 40 17.06	2.2716	23 50 57.1	8.206
11	20 42 33.29	2.2695	23 42 40.7	8.341
12	20 44 49.40	2.2675	23 34 16.2	8.476
13	20 47 5.39	2.2654	23 25 43.6	8.609
14	20 49 21.25	2.2633	23 17 3.1	8.742
15	20 51 36.99	2.2612	23 8 14.6	8.874
16	20 53 52.60	2.2591	22 59 18.2	9.006
17	20 56 8.08	2.2570	22 50 13.9	9.137
18	20 58 23.44	2.2549	22 41 1.7	9.268
19	21 0 38.67	2.2527	22 31 41.7	9.398
20	21 2 53.76	2.2504	22 22 13.9	9.528
21	21 5 8.71	2.2481	22 12 38.4	9.657
22	21 7 23.53	2.2459	22 2 55.1	9.785
23	21 9 38.22	2.2437	21 53 4.2	9.912
24	21 11 52.78	2.2415	S.21 43 5.7	10.038

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	21 11 52.78	2.2415	S. 21 43 5.7	10.038
1	21 14 7.20	2.2392	21 32 59.6	10.164
2	21 16 21.49	2.2370	21 22 46.0	10.290
3	21 18 35.64	2.2347	21 12 24.8	10.415
4	21 20 49.66	2.2325	21 1 56.2	10.538
5	21 23 3.54	2.2302	20 51 20.2	10.661
6	21 25 17.28	2.2279	20 40 36.9	10.783
7	21 27 30.89	2.2257	20 29 46.2	10.905
8	21 29 44.37	2.2235	20 18 48.3	11.026
9	21 31 57.71	2.2213	20 7 43.1	11.147
10	21 34 10.92	2.2191	19 56 30.7	11.266
11	21 36 24.00	2.2168	19 45 11.2	11.384
12	21 38 36.94	2.2146	19 33 44.7	11.501
13	21 40 49.75	2.2124	19 22 11.1	11.618
14	21 43 2.43	2.2102	19 10 30.5	11.734
15	21 45 14.98	2.2081	18 58 43.0	11.849
16	21 47 27.40	2.2060	18 46 48.6	11.963
17	21 49 39.70	2.2039	18 34 47.4	12.077
18	21 51 51.87	2.2018	18 22 39.4	12.190
19	21 54 3.92	2.1997	18 10 24.6	12.302
20	21 56 15.84	2.1976	17 58 3.2	12.412
21	21 58 27.63	2.1955	17 45 35.2	12.522
22	22 0 39.30	2.1936	17 33 0.6	12.631
23	22 2 50.86	2.1917	S. 17 20 19.5	12.738

SUNDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	22 5 2.30	2.1897	S. 17 7 32.0	12.845
1	22 7 13.62	2.1878	16 54 38.1	12.952
2	22 9 24.83	2.1859	16 41 37.8	13.057
3	22 11 35.93	2.1841	16 28 31.2	13.162
4	22 13 46.92	2.1823	16 15 18.4	13.265
5	22 15 57.80	2.1805	16 1 59.4	13.367
6	22 18 8.58	2.1787	15 48 34.4	13.468
7	22 20 19.25	2.1771	15 35 3.3	13.568
8	22 22 29.83	2.1755	15 21 26.2	13.667
9	22 24 40.31	2.1739	15 7 43.2	13.765
10	22 26 50.69	2.1723	14 53 54.4	13.863
11	22 29 0.98	2.1707	14 39 59.7	13.959
12	22 31 11.18	2.1692	14 25 59.3	14.053
13	22 33 21.29	2.1678	14 11 53.3	14.147
14	22 35 31.32	2.1665	13 57 41.6	14.241
15	22 37 41.27	2.1652	13 43 24.4	14.333
16	22 39 51.14	2.1639	13 29 1.7	14.423
17	22 42 0.93	2.1626	13 14 33.6	14.513
18	22 44 10.65	2.1614	13 0 0.1	14.602
19	22 46 20.30	2.1603	12 45 21.4	14.689
20	22 48 29.89	2.1592	12 30 37.5	14.775
21	22 50 39.41	2.1582	12 15 48.4	14.860
22	22 52 48.88	2.1573	12 0 54.3	14.943
23	22 54 58.29	2.1564	11 45 55.2	15.026
24	22 57 7.65	2.1556	S. 11 30 51.2	15.107

MONDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 57 7.65	2.1556	S. 11 30 51.2	15.107
1	22 59 16.96	2.1548	11 15 42.3	15.188
2	23 1 26.23	2.1541	11 0 28.6	15.267
3	23 3 35.45	2.1534	10 45 10.3	15.344
4	23 5 44.63	2.1528	10 29 47.3	15.421
5	23 7 53.78	2.1523	10 14 19.7	15.497
6	23 10 2.91	2.1519	9 58 47.7	15.570
7	23 12 12.01	2.1515	9 43 11.3	15.643
8	23 14 21.09	2.1511	9 27 30.5	15.716
9	23 16 30.14	2.1508	9 11 45.4	15.786
10	23 18 39.18	2.1506	8 55 56.2	15.854
11	23 20 48.21	2.1505	8 40 2.9	15.922
12	23 22 57.24	2.1505	8 24 5.6	15.988
13	23 25 6.27	2.1505	8 8 4.4	16.053
14	23 27 15.30	2.1505	7 51 59.3	16.117
15	23 29 24.33	2.1507	7 35 50.4	16.178
16	23 31 33.38	2.1509	7 19 37.9	16.238
17	23 33 42.44	2.1512	7 3 21.8	16.298
18	23 35 51.52	2.1515	6 47 2.1	16.357
19	23 38 0.62	2.1520	6 30 39.0	16.413
20	23 40 9.76	2.1526	6 14 12.6	16.468
21	23 42 18.93	2.1532	5 57 42.9	16.522
22	23 44 28.14	2.1538	5 41 10.0	16.573
23	23 46 37.39	2.1546	S. 5 24 34.1	16.623

TUESDAY, NOVEMBER 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 48 46.69	2.1554	S. 5 7 55.2	16.672

PHASES OF THE MOON.

		d	h	m
○ Full Moon . .	Oct.	5	18	11.6
☾ Last Quarter		12	9	37.5
● New Moon		20	6	24.0
☽ First Quarter . . .		28	9	26.3

		d	h
☾ Perigee	Oct.	6	16.5
☾ Apogee		21	15.6

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Antares	W.	56° 47′ 53″	2572	58° 27′ 27″	2553	60° 7′ 27″	2534	61° 47′ 53″	2515
	α Pegasi	E.	52 8 21	3201	50 42 13	3214	49 16 20	3230	47 50 46	3248
	Jupiter	E.	76 1 22	2526	74 20 45	2508	72 39 43	2489	70 58 14	2470
	α Arietis	E.	91 46 13	2636	90 8 7	2618	88 29 36	2599	86 50 39	2580
2	Antares	W.	70 16 42	2420	71 59 48	2401	73 43 21	2382	75 27 21	2364
	Jupiter	E.	62 24 14	2377	60 40 6	2358	58 55 31	2339	57 10 29	2321
	α Arietis	E.	78 29 34	2488	76 48 4	2471	75 6 10	2453	73 23 51	2436
	Aldebaran	E.	108 46 24	2465	107 4 21	2445	105 21 51	2426	103 38 54	2407
3	Antares	W.	84 14 0	2274	86 0 38	2257	87 47 41	2240	89 35 9	2223
	α Aquilæ	W.	46 14 11	4281	47 21 21	4147	48 30 37	4027	49 41 50	3915
	Jupiter	E.	48 18 40	2232	46 31 0	2214	44 42 54	2198	42 54 23	2182
	α Arietis	E.	64 46 20	2356	63 1 42	2342	61 16 43	2328	59 31 24	2314
	Aldebaran	E.	94 57 21	2315	93 11 43	2298	91 25 40	2281	89 39 12	2264
4	α Aquilæ	W.	56 3 40	3478	57 24 29	3409	58 46 35	3347	60 9 52	3289
	Mars	W.	34 13 51	2256	36 0 56	2241	37 48 22	2228	39 36 8	2214
	Jupiter	E.	33 45 50	2105	31 54 59	2092	30 3 48	2079	28 12 17	2066
	α Arietis	E.	50 40 24	2262	48 53 29	2256	47 6 24	2249	45 19 10	2245
	Aldebaran	E.	80 41 1	2189	78 52 17	2176	77 3 14	2164	75 13 52	2151
5	α Aquilæ	W.	67 21 36	3063	68 50 31	3029	70 20 8	2997	71 50 24	2969
	Mars	W.	48 39 31	2160	50 28 59	2151	52 18 41	2143	54 8 35	2136
	Fomalhaut	W.	34 4 22	2652	35 42 7	2590	37 21 16	2537	39 1 38	2489
	Aldebaran	E.	66 2 50	2103	64 11 56	2096	62 20 50	2090	60 29 35	2085
6	α Aquilæ	W.	79 29 26	2870	81 2 23	2858	82 35 36	2848	84 9 1	2841
	Mars	W.	63 20 31	2109	65 11 16	2107	67 2 5	2105	68 52 57	2103
	Fomalhaut	W.	47 37 32	2339	49 22 49	2308	51 8 37	2289	52 54 52	2273
	Aldebaran	E.	51 11 48	2073	49 20 8	2075	47 28 30	2077	45 36 56	2081
	Pollux	E.	94 49 9	2001	92 55 36	1998	91 1 59	1996	89 8 18	1994
7	Mars	W.	78 7 23	2109	79 58 9	2113	81 48 49	2116	83 39 23	2121
	Fomalhaut	W.	61 50 58	2225	63 38 49	2220	65 26 46	2218	67 14 47	2216
	α Pegasi	W.	44 10 57	2801	45 45 23	2753	47 20 53	2712	48 57 17	2677
	Pollux	E.	79 39 40	1998	77 46 3	2001	75 52 30	2005	73 59 3	2010
8	Fomalhaut	W.	76 14 46	2229	78 2 31	2234	79 50 8	2241	81 37 35	2249
	α Pegasi	W.	57 9 5	2566	58 48 47	2553	60 28 46	2544	62 8 58	2538
	Jupiter	W.	26 53 24	2001	28 46 56	2010	30 40 15	2019	32 33 20	2028
	Pollux	E.	64 33 58	2042	62 41 29	2051	60 49 14	2060	58 57 13	2070
	Regulus	E.	101 4 39	2053	99 12 28	2062	97 20 30	2071	95 28 46	2081
	Venus	E.	103 26 16	2385	101 42 20	2394	99 58 37	2404	98 15 8	2415
9	Fomalhaut	W.	90 31 28	2301	92 17 26	2315	94 3 4	2328	95 48 22	2342
	α Pegasi	W.	70 31 20	2533	72 11 47	2538	73 52 8	2543	75 32 21	2550
	Jupiter	W.	41 54 47	2063	43 46 12	2096	45 37 17	2109	47 28 3	2122
	α Arietis	W.	26 54 32	2455	28 36 49	2430	30 19 41	2412	32 2 58	2401
	Pollux	E.	49 41 8	2126	47 50 48	2139	46 0 48	2152	44 11 8	2165
	Regulus	E.	86 14 3	2136	84 23 59	2149	82 34 15	2162	80 44 50	2175
	Venus	E.	89 41 38	2474	87 59 48	2488	86 18 18	2502	84 37 7	2516

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Antares	W.	63 28 46	2496	65 10 5	2477	66 51 51	2458	68 34 3	2439
	α Pegasi	E.	46 25 34	3272	45 0 50	3301	43 36 40	3336	42 13 10	3376
	Jupiter	E.	69 16 19	2452	67 33 58	2433	65 51 10	2414	64 7 55	2396
	α Arietis	E.	85 11 17	2561	83 31 29	2543	81 51 16	2525	80 10 38	2507
2	Antares	W.	77 11 48	2346	78 56 41	2327	80 42 1	2309	82 27 47	2291
	Jupiter	E.	55 25 0	2303	53 39 5	2285	51 52 43	2267	50 5 55	2249
	α Arietis	E.	71 41 8	2419	69 58 1	2403	68 14 30	2387	66 30 36	2371
	Aldebaran	E.	101 55 29	2388	100 11 37	2369	98 27 18	2351	96 42 33	2333
3	Antares	W.	91 23 2	2207	93 11 19	2192	94 59 59	2176	96 49 2	2161
	α Aquilæ	W.	50 54 55	3813	52 9 44	3718	53 26 12	3632	54 44 12	3551
	Jupiter	E.	41 5 28	2165	39 16 8	2150	37 26 25	2135	35 36 19	2120
	α Arietis	E.	57 45 45	2302	55 59 48	2291	54 13 35	2280	52 27 6	2271
	Aldebaran	E.	87 52 20	2248	86 5 4	2233	84 17 25	2218	82 29 24	2203
4	α Aquilæ	W.	61 34 16	3236	62 59 43	3187	64 26 8	3142	65 53 27	3101
	Mars	W.	41 24 14	2202	43 12 38	2191	45 1 19	2180	46 50 17	2169
	Jupiter	E.	26 20 26	2054	24 28 16	2043	22 35 49	2032	20 43 5	2021
	α Arietis	E.	43 31 50	2243	41 44 26	2243	39 57 3	2245	38 9 43	2250
	Aldebaran	E.	73 24 11	2140	71 34 13	2130	69 44 0	2120	67 53 32	2111
5	α Aquilæ	W.	73 21 16	2944	74 52 39	2921	76 24 31	2901	77 56 48	2885
	Mars	W.	55 58 40	2129	57 48 55	2122	59 39 20	2118	61 29 52	2113
	Fomalhaut	W.	40 43 6	2449	42 25 31	2412	44 8 48	2381	45 52 50	2353
	Aldebaran	E.	58 38 12	2080	56 46 42	2077	54 55 7	2074	53 3 28	2073
6	α Aquilæ	W.	85 42 36	2836	87 16 17	2833	88 50 2	2833	90 23 47	2835
	Mars	W.	70 43 51	2103	72 34 46	2103	74 25 40	2104	76 16 33	2106
	Fomalhaut	W.	54 41 31	2260	56 28 30	2248	58 15 46	2239	60 3 16	2231
	Aldebaran	E.	43 45 28	2087	41 54 9	2094	40 3 1	2103	38 12 7	2115
	Pollux	E.	87 14 34	1994	85 20 50	1993	83 27 5	1994	81 33 21	1996
7	Mars	W.	85 29 50	2127	87 20 8	2133	89 10 17	2140	91 0 15	2148
	Fomalhaut	W.	69 2 50	2216	70 50 53	2217	72 38 55	2220	74 26 53	2223
	α Pegasi	W.	50 34 28	2646	52 12 20	2621	53 50 47	2599	55 29 43	2580
	Pollux	E.	72 5 44	2015	70 12 33	2021	68 19 31	2027	66 26 39	2034
8	Fomalhaut	W.	83 24 50	2258	85 11 52	2267	86 58 40	2278	88 45 12	2289
	α Pegasi	W.	63 49 19	2533	65 29 47	2530	67 10 18	2530	68 50 50	2531
	Jupiter	W.	34 26 10	2038	36 18 45	2049	38 11 3	2060	40 3 4	2072
	Pollux	E.	57 5 27	2080	55 13 57	2090	53 22 43	2102	51 31 47	2113
	Regulus	E.	93 37 17	2090	91 46 3	2101	89 55 6	2113	88 4 26	2124
	Venus	E.	96 31 54	2425	94 48 55	2436	93 6 12	2448	91 23 46	2461
9	Fomalhaut	W.	97 33 20	2357	99 17 56	2374	101 2 8	2391	102 45 56	2408
	α Pegasi	W.	77 12 25	2559	78 52 17	2567	80 31 57	2577	82 11 23	2589
	Jupiter	W.	49 18 29	2136	51 8 34	2149	52 58 18	2164	54 47 40	2178
	α Arietis	W.	33 46 32	2393	35 30 17	2388	37 14 9	2387	38 58 3	2387
	Pollux	E.	42 21 48	2179	40 32 49	2194	38 44 12	2208	36 55 57	2224
	Regulus	E.	78 55 45	2189	77 7 1	2203	75 18 38	2218	73 30 37	2233
	Venus	E.	82 56 16	2531	81 15 46	2546	79 35 37	2562	77 55 50	2577

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	α Pegasi	W.	83° 50′ 33″	2601	85° 29′ 26″	2615	87° 8′ 1″	2629	88° 46′ 17″	2644
	Jupiter	W.	56 36 41	2192	58 25 20	2208	60 13 36	2223	62 1 30	2238
	α Arietis	W.	40 41 56	2390	42 25 45	2395	44 9 27	2401	45 53 0	2409
	Pollux	E.	35 8 5	2239	33 20 36	2254	31 33 29	2270	29 46 45	2286
	Regulus	E.	71 42 59	2248	69 55 43	2264	68 8 50	2279	66 22 20	2295
	Venus	E.	76 16 24	2594	74 37 21	2610	72 58 40	2627	71 20 22	2644
11	Jupiter	W.	70 55 14	2316	72 40 50	2332	74 26 3	2348	76 10 53	2364
	α Arietis	W.	54 27 39	2459	56 9 50	2471	57 51 44	2484	59 33 20	2496
	Regulus	E.	57 35 44	2378	55 51 37	2394	54 7 53	2410	52 24 33	2428
	Venus	E.	63 14 42	2732	61 38 45	2750	60 3 11	2768	58 28 1	2785
	Sun	E.	107 47 13	2680	106 10 6	2696	104 33 21	2713	102 56 59	2731
12	Jupiter	W.	84 49 19	2443	86 31 53	2458	88 14 6	2473	89 55 57	2488
	α Arietis	W.	67 56 49	2564	69 36 34	2577	71 16 0	2591	72 55 7	2606
	Aldebaran	W.	37 41 14	2600	39 20 9	2607	40 58 54	2616	42 37 27	2625
	Regulus	E.	43 54 0	2514	42 13 6	2532	40 32 37	2549	38 52 32	2567
	Venus	E.	50 38 2	2876	49 5 12	2894	47 32 45	2912	46 0 41	2929
	Sun	E.	95 0 50	2816	93 26 43	2833	91 52 58	2849	90 19 34	2866
13	α Arietis	W.	81 5 54	2675	82 43 7	2689	84 20 2	2703	85 56 38	2716
	Aldebaran	W.	50 46 54	2678	52 24 4	2689	54 0 59	2700	55 37 39	2711
	Sun	E.	82 37 50	2946	81 6 30	2962	79 35 29	2977	78 4 48	2992
14	α Arietis	W.	93 55 13	2782	95 30 4	2795	97 4 39	2808	98 38 57	2821
	Aldebaran	W.	63 37 12	2768	65 12 22	2779	66 47 18	2789	68 22 0	2801
	Pollux	W.	19 18 18	2729	20 54 20	2739	22 30 8	2750	24 5 42	2760
	Sun	E.	70 35 54	3063	69 6 59	3077	67 38 21	3090	66 9 59	3102
15	Aldebaran	W.	76 12 0	2852	77 45 20	2862	79 18 28	2872	80 51 23	2881
	Pollux	W.	32 0 5	2812	33 34 17	2821	35 8 17	2831	36 42 4	2842
	Sun	E.	58 51 56	3163	57 25 3	3174	55 58 23	3186	54 31 57	3196
16	Aldebaran	W.	88 33 2	2926	90 4 48	2934	91 36 24	2942	93 7 50	2950
	Pollux	W.	44 27 59	2885	46 0 37	2894	47 33 4	2901	49 5 21	2909
	Sun	E.	47 22 49	3246	45 57 34	3255	44 32 30	3264	43 7 36	3273
17	Pollux	W.	56 44 23	2946	58 15 44	2951	59 46 58	2958	61 18 4	2964
	Regulus	W.	20 38 23	3045	22 7 40	3039	23 37 5	3034	25 6 35	3033
	Sun	E.	36 5 34	3313	34 41 37	3319	33 17 48	3326	31 54 7	3334
18	Pollux	W.	68 51 41	2992	70 22 4	2997	71 52 20	3002	73 22 30	3006
	Regulus	W.	32 34 18	3034	34 3 48	3036	35 33 16	3039	37 2 41	3040
	Sun	E.	24 57 41	3366	23 34 46	3372	22 11 57	3378	20 49 15	3384
21	Sun	W.	7 55 42	3473	9 16 36	3470	10 37 34	3467	11 58 35	3465
	α Aquilæ	E.	84 30 10	3923	83 17 14	3930	82 4 25	3937	80 51 43	3946
	Mars	E.	103 36 45	3253	102 11 38	3253	100 46 32	3255	99 21 28	3256
22	Sun	W.	18 44 2	3461	20 5 10	3460	21 26 19	3460	22 47 28	3458
	α Aquilæ	E.	74 50 37	4001	73 38 58	4016	72 27 34	4031	71 16 25	4047
	Mars	E.	92 16 26	3960	90 51 28	3960	89 26 30	3961	88 1 33	3960

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
10	α Pegasi	W.	90° 24′ 12″	2660	92° 1′ 46″	2676	93° 38′ 58″	2693	95° 15′ 47″	2712
	Jupiter	W.	63 49 1	2253	65 36 9	2269	67 22 54	2285	69 9 16	2301
	α Arietis	W.	47 36 22	2417	49 19 32	2426	51 2 29	2436	52 45 12	2448
	Pollux	E.	28 0 25	2302	26 14 29	2319	24 28 57	2337	22 43 52	2356
	Regulus	E.	64 36 13	2311	62 50 30	2328	61 5 11	2344	59 20 16	2360
	Venus	E.	69 42 27	2661	68 4 55	2679	66 27 47	2697	64 51 3	2714
11	Jupiter	W.	77 55 19	2380	79 39 23	2396	81 23 4	2411	83 6 23	2427
	α Arietis	W.	61 14 39	2509	62 55 40	2522	64 36 22	2536	66 16 45	2550
	Regulus	E.	50 41 38	2445	48 59 7	2462	47 17 0	2480	45 35 18	2497
	Venus	E.	56 53 14	2804	55 18 51	2821	53 44 51	2840	52 11 15	2858
	Sun	E.	101 21 0	2748	99 45 24	2765	98 10 10	2782	96 35 19	2799
12	Jupiter	W.	91 37 27	2504	93 18 35	2518	94 59 23	2533	96 39 50	2548
	α Arietis	W.	74 33 54	2619	76 12 23	2634	77 50 32	2648	79 28 22	2661
	Aldebaran	W.	44 15 48	2635	45 53 55	2645	47 31 49	2655	49 9 29	2666
	Regulus	E.	37 12 52	2585	35 33 37	2604	33 54 47	2622	32 16 22	2640
	Venus	E.	44 28 59	2947	42 57 40	2965	41 26 43	2983	39 56 9	3001
	Sun	E.	88 46 32	2883	87 13 51	2898	85 41 30	2915	84 9 30	2931
13	α Arietis	W.	87 32 56	2730	89 8 56	2743	90 44 39	2756	92 20 5	2769
	Aldebaran	W.	57 14 4	2722	58 50 14	2735	60 26 8	2746	62 1 47	2756
	Sun	E.	76 34 25	3006	75 4 20	3022	73 34 34	3035	72 5 5	3050
14	α Arietis	W.	100 12 58	2832	101 46 44	2845	103 20 14	2857	104 53 28	2869
	Aldebaran	W.	69 56 27	2811	71 30 40	2821	73 4 40	2831	74 38 27	2842
	Pollux	W.	25 41 2	2771	27 16 8	2781	28 51 1	2792	30 25 40	2802
	Sun	E.	64 41 52	3115	63 14 1	3128	61 46 25	3139	60 19 3	3152
15	Aldebaran	W.	82 24 6	2891	83 56 37	2899	85 28 57	2909	87 1 5	2917
	Pollux	W.	38 15 38	2651	39 49 0	2659	41 22 11	2668	42 55 11	2677
	Sun	E.	53 5 43	3207	51 39 42	3217	50 13 53	3226	48 48 15	3236
16	Aldebaran	W.	94 39 5	2958	96 10 10	2965	97 41 6	2973	99 11 52	2981
	Pollux	W.	50 37 28	2916	52 9 26	2924	53 41 14	2931	55 12 53	2939
	Sun	E.	41 42 53	3281	40 18 19	3289	38 53 55	3297	37 29 40	3305
17	Pollux	W.	62 49 2	2969	64 19 53	2976	65 50 36	2981	67 21 12	2987
	Regulus	W.	26 36 7	3032	28 5 40	3031	29 35 14	3032	31 4 47	3033
	Sun	E.	30 30 35	3340	29 7 10	3347	27 43 53	3353	26 20 43	3360
18	Pollux	W.	74 52 35	3011	76 22 34	3015	77 52 28	3020	79 22 16	3024
	Regulus	W.	38 32 4	3043	40 1 24	3045	41 30 41	3047	42 59 55	3051
	Sun	E.	19 26 40	3389	18 4 11	3395	16 41 49	3400	15 19 33	3406
21	Sun	W.	13 19 38	3464	14 40 42	3463	16 1 48	3462	17 22 55	3462
	α Aquilæ	E.	79 39 10	3955	78 26 46	3965	77 14 32	3976	76 2 29	3987
	Mars	E.	97 56 25	3258	96 31 24	3259	95 6 24	3259	93 41 25	3259
22	Sun	W.	24 8 39	3457	25 29 51	3455	26 51 5	3454	28 12 21	3453
	α Aquilæ	E.	70 5 32	4066	68 54 57	4084	67 44 40	4105	66 34 43	4127
	Mars	E.	86 36 35	3260	85 11 37	3259	83 46 38	3259	82 21 38	3257

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L of Diff.
23	**Sun**	W.	29° 33′ 38″	3451	30° 54′ 57″	3448	32° 16′ 19″	3446	33° 37′ 44″	3443
	α Aquilæ	E.	65 25 7	4151	64 15 54	4177	63 7 6	4204	61 58 44	4235
	Mars	E.	80 56 36	3256	79 31 33	3251	78 6 28	3252	76 41 20	3250
	Fomalhaut	E.	91 24 56	3246	89 59 41	3244	88 34 24	3242	87 9 5	3240
24	**Sun**	W.	40 25 41	3494	41 47 30	3421	43 9 23	3415	44 31 22	3411
	α Aquilæ	E.	56 24 38	4492	55 19 37	4469	54 15 18	4522	53 11 45	4577
	Mars	E.	69 34 58	3235	68 9 30	3231	66 43 58	3227	65 18 21	3223
	Fomalhaut	E.	80 1 52	3230	78 36 18	3228	77 10 42	3225	75 45 3	3224
25	**Sun**	W.	51 22 51	3379	52 45 31	3372	54 8 19	3365	55 31 16	3357
	α Aquilæ	E.	48 7 18	4937	47 9 33	5030	46 13 1	5132	45 17 48	5245
	Mars	E.	58 8 49	3195	56 42 34	3188	55 16 11	3182	53 49 40	3175
	Fomalhaut	E.	68 36 10	3213	67 10 16	3210	65 44 19	3209	64 18 20	3207
	α Pegasi	E.	89 31 58	3370	88. 9 7	3364	86 46 9	3358	85 23 4	3351
26	**Sun**	W.	62 28 29	3310	63 52 29	3300	65 16 40	3289	66 41 4	3278
	Antares	W.	27 35 26	2951	29 6 40	2940	30 38 8	2930	32 9 49	2918
	Mars	E.	46 34 50	3134	45 7 22	3124	43 39 42	3115	42 11 51	3106
	Fomalhaut	E.	57 7 59	3202	55 41 52	3202	54 15 45	3203	52 49 39	3204
	α Pegasi	E.	78 26 1	3325	77 2 18	3320	75 38 30	3316	74 14 37	3311
	Jupiter	E.	101 58 21	2896	100 25 57	2887	98 53 22	2877	97 20 34	2868
27	**Sun**	W.	73 46 31	3216	75 12 21	3202	76 38 28	3188	78 4 51	3174
	Antares	W.	39 51 53	2859	41 25 4	2846	42 58 32	2833	44 32 17	2820
	Mars	E.	34 49 28	3052	33 20 19	3040	31 50 56	3028	30 21 18	3017
	Fomalhaut	E.	45 39 53	3236	44 14 15	3235	42 48 47	3246	41 23 32	3259
	α Pegasi	E.	67 14 2	3295	65 49 45	3294	64 25 27	3293	63 1 7	3293
	Jupiter	E.	89 33 11	2811	87 58 58	2798	86 24 28	2786	84 49 42	2772
28	**Sun**	W.	85 21 15	3096	86 49 29	3079	88 18 4	3063	89 46 59	3046
	Antares	W.	52 25 34	2747	54 1 11	2732	55 37 9	2716	57 13 28	2700
	α Pegasi	E.	55 59 50	3309	54 35 49	3316	53 11 56	3325	51 48 14	3336
	Jupiter	E.	76 51 23	2703	75.14 47	2687	73 37 50	2672	72 0 33	2656
	α Arietis	E.	96 5 25	2811	94 31 12	2796	92 56 39	2780	91 21 45	2765
29	**Sun**	W.	97 17 1	2955	98 48 10	2936	100 19 43	2916	101 51 41	2898
	Antares	W.	65 20 31	2615	66 59 5	2599	68 38 2	2580	70 17 24	2562
	Jupiter	E.	63 48 39	2574	62 9 8	2556	60 29 13	2539	58 48 54	2521
	α Arietis	E.	83 21 55	2682	81 44 51	2665	80 7 24	2648	78 29 34	2631
30	**Sun**	W.	109 37 43	2798	111 12 13	2779	112 47 9	2759	114 22 31	2738
	Antares	W.	78 40 31	2470	80 22 26	2452	82 4 47	2433	83 47 34	2415
	Jupiter	E.	50 21 4	2431	48 38 13	2412	46 54 56	2394	45 11 13	2375
	α Arietis	E.	70 14 35	2545	68 34 25	2529	66 53 52	2512	65 12 55	2496
	Aldebaran	E.	100 27 14	2513	98 46 19	2494	97 4 58	2475	95 23 10	2456
31	Antares	W.	92 28 12	2322	94 13 40	2303	95 59 35	2285	97 45 56	2267
	α Aquilæ	W.	51 41 53	3886	52 55 27	3794	54 10 35	3710	55 27 11	3631
	Jupiter	E.	36 25 56	2284	34 39 33	2266	32 52 43	2248	31 5 27	2230
	α Arietis	E.	56 42 36	2419	54 59 28	2405	53 16 0	2391	51 32 13	2379
	Aldebaran	E.	86 47 30	2364	85 3 3	2345	83 18 9	2328	81 32 50	2310

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Sun	W.	34 59 12	3440	36 20 43	3437	37 42 18	3433	39 3 57	3429
	α Aquilæ	E.	60 50 51	4266	59 43 27	4302	58 36 36	4339	57 30 19	4378
	Mars	E.	75 16 10	3247	73 50 57	3245	72 25 41	3242	71 0 21	3239
	Fomalhaut	E.	85 43 43	3238	84 18 19	3236	82 52 52	3234	81 27 23	3232
24	Sun	W.	45 53 26	3405	47 15 37	3400	48 37 54	3393	50 0 19	3386
	α Aquilæ	E.	52 9 0	4637	51 7 7	4703	50 6 10	4774	49 6 12	4852
	Mars	E.	63 52 39	3218	62 26 51	3213	61 0 57	3207	59 34 56	3202
	Fomalhaut	E.	74 19 22	3221	72 53 38	3219	71 27 51	3217	70 2 2	3214
25	Sun	W.	56 54 22	3348	58 17 38	3339	59 41 4	3330	61 4 41	3320
	α Aquilæ	E.	44 24 0	5369	43 31 43	5504	42 41 2	5655	41 52 5	5824
	Mars	E.	52 23 1	3168	50 56 13	3159	49 29 15	3152	48 2 8	3143
	Fomalhaut	E.	62 52 19	3205	61 26 16	3204	60 0 12	3203	58 34 6	3202
	α Pegasi	E.	83 59 52	3346	82 36 34	3340	81 13 9	3335	79 49 38	3330
26	Sun	W.	68 5 41	3266	69 30 32	3254	70 55 37	3242	72 20 56	3229
	Antares	W.	33 41 45	2907	35 13 55	2896	36 46 19	2884	38 18 58	2872
	Mars	E.	40 43 48	3095	39 15 32	3085	37 47 4	3074	36 18 23	3063
	Fomalhaut	E.	51 23 34	3206	49 57 32	3209	48 31 33	3214	47 5 40	3219
	α Pegasi	E.	72 50 38	3307	71 26 35	3303	70 2 27	3300	68 38 16	3298
	Jupiter	E.	95 47 34	2857	94 14 20	2846	92 40 52	2835	91 7 9	2823
27	Sun	W.	79 31 31	3159	80 58 29	3144	82 25 45	3129	83 53 20	3112
	Antares	W.	46 6 19	2805	47 40 40	2792	49 15 19	2777	50 50 17	2763
	Mars	E.	28 51 26	3005	27 21 19	2993	25 50 57	2981	24 20 20	2969
	Fomalhaut	E.	39 58 32	3276	38 33 52	3295	37 9 35	3320	35 45 47	3350
	α Pegasi	E.	61 36 47	3294	60 12 28	3295	58 48 11	3299	57 23 58	3303
	Jupiter	E.	83 14 38	2760	81 39 17	2746	80 3 38	2732	78 27 40	2717
28	Sun	W.	91 16 15	3028	92 45 53	3010	94 15 53	2993	95 46 15	2973
	Antares	W.	58 50 8	2684	60 27 10	2667	62 4 34	2650	63 42 21	2633
	α Pegasi	E.	50 24 47	3352	49 1 36	3371	47 38 46	3391	46 16 19	3415
	Jupiter	E.	70 22 54	2640	68 44 54	2624	67 6 32	2607	65 27 47	2591
	α Arietis	E.	89 46 31	2748	88 10 55	2732	86 34 57	2715	84 58 37	2698
29	Sun	W.	103 24 3	2878	104 56 50	2859	106 30 2	2838	108 3 40	2819
	Antares	W.	71 57 11	2544	73 37 23	2526	75 18 0	2507	76 59 3	2489
	Jupiter	E.	57 8 10	2504	55 27 2	2485	53 45 28	2467	52 3 29	2449
	α Arietis	E.	76 51 21	2614	75 12 45	2596	73 33 45	2580	71 54 22	2562
30	Sun	W.	115 58 20	2718	117 34 36	2698	119 11 18	2678	120 48 27	2658
	Antares	W.	85 30 48	2396	87 14 29	2378	88 58 36	2359	90 43 10	2339
	Jupiter	E.	43 27 3	2357	41 42 26	2339	39 57 23	2320	38 11 53	2302
	α Arietis	E.	63 31 36	2480	61 49 54	2464	60 7 50	2448	58 25 24	2433
	Aldebaran	E.	93 40 55	2438	91 58 14	2419	90 15 6	2400	88 31 31	2382
31	Antares	W.	99 32 44	2249	101 19 58	2232	103 7 38	2215	104 55 43	2198
	α Aquilæ	W.	56 45 12	3558	58 4 32	3490	59 25 7	3426	60 46 54	3367
	Jupiter	E.	29 17 44	2212	27 29 35	2196	25 41 1	2178	23 52 1	2161
	α Arietis	E.	49 48 8	2368	48 3 47	2357	46 19 11	2348	44 34 21	2339
	Aldebaran	E.	79 47 5	2293	78 0 55	2276	76 14 20	2259	74 27 20	2243

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	14 28 33.84	9.819	S. 14 40 47.6	−47.66	16 9.98	67.03	16 19.77	0.036
Wed.	2	14 32 29.89	9.853	14 59 44.3	47.06	16 10.23	67.15	16 20.27	0.003
Thur.	3	14 36 26.74	9.887	15 18 26.3	46.44	16 10.48	67.26	16 19.97	0.031
Frid.	4	14 40 24.41	9.921	15 36 53.2	−45.80	16 10.72	67.38	16 18.86	0.065
Sat.	5	14 44 22.92	9.956	15 55 4.6	45.15	16 10.96	67.49	16 16.92	0.100
SUN.	6	14 48 22.26	9.991	16 13 0.1	44.48	16 11.20	67.61	16 14.14	0.135
Mon.	7	14 52 22.45	10.026	16 30 39.4	−43.79	16 11.43	67.73	16 10.51	0.170
Tues.	8	14 56 23.50	10.062	16 48 2.1	43.09	16 11.66	67.85	16 6.03	0.206
Wed.	9	15 0 25.40	10.097	17 5 7.8	42.37	16 11.88	67.97	16 0.69	0.241
Thur.	10	15 4 28.17	10.133	17 21 56.1	−41.64	16 12.10	68.09	15 54.50	0.277
Frid.	11	15 8 31.81	10.169	17 38 26.6	40.89	16 12.32	68.21	15 47.44	0.313
Sat.	12	15 12 36.32	10.206	17 54 38.9	40.12	16 12.53	68.33	15 39.51	0.349
SUN.	13	15 16 41.70	10.243	18 10 32.5	−39.32	16 12.74	68.44	15 30.69	0.386
Mon.	14	15 20 47.96	10.280	18 26 7.1	38.52	16 12.94	68.56	15 21.01	0.423
Tues.	15	15 24 55.08	10.315	18 41 22.4	37.70	16 13.15	68.68	15 10.48	0.458
Wed.	16	15 29 3.06	10.350	18 56 17.9	−36.87	16 13.35	68.80	14 59.10	0.493
Thur.	17	15 33 11.89	10.385	19 10 53.1	36.02	16 13.55	68.92	14 46.86	0.528
Frid.	18	15 37 21.56	10.420	19 25 7.6	35.15	16 13.75	69.03	14 33.78	0.563
Sat.	19	15 41 32.06	10.454	19 39 1.1	−34.26	16 13.95	69.15	14 19.88	0.597
SUN.	20	15 45 43.38	10.488	19 52 33.3	33.36	16 14.14	69.26	14 5.16	0.631
Mon.	21	15 49 55.50	10.521	20 5 43.6	32.44	16 14.33	69.37	13 49.64	0.664
Tues.	22	15 54 8.41	10.554	20 18 31.7	−31.51	16 14.52	69.48	13 33.32	0.697
Wed.	23	15 58 22.10	10.586	20 30 57.2	30.57	16 14.71	69.59	13 16.24	0.729
Thur.	24	16 2 36.55	10.617	20 42 59.9	29.61	16 14.89	69.69	12 58.40	0.760
Frid.	25	16 6 51.74	10.648	20 54 39.3	−28.63	16 15.07	69.79	12 39.82	0.790
Sat.	26	16 11 7.65	10.678	21 5 55.1	27.64	16 15.25	69.89	12 20.51	0.820
SUN.	27	16 15 24.27	10.707	21 16 47.0	26.64	16 15.43	69.99	12 0.50	0.849
Mon.	28	16 19 41.58	10.735	21 27 14.7	−25.62	16 15.60	70.09	11 39.81	0.877
Tues.	29	16 23 59.57	10.762	21 37 17.9	24.59	16 15.76	70.18	11 18.45	0.904
Wed.	30	16 28 18.20	10.789	21 46 56.4	23.55	16 15.92	70.27	10 56.44	0.931
Thur.	31	16 32 37.46	10.815	S. 21 56 9.8	−22.49	16 16.07	70.36	10 33.79	0.957

Note.—The mean time of semidiameter passing may be found by subtracting $0^{s}.19$ from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	14 28 36.51	9.820	S. 14 41 0.6	−47.66	16 19.78	0.036	14 44 56.29
Wed.	2	14 32 32.57	9.853	14 59 57.2	47.05	16 20.27	0.003	14 48 52.84
Thur.	3	14 36 29.43	9.887	15 18 39.0	46.43	16 19.96	0.031	14 52 49.40
Frid.	4	14 40 27.11	9.921	15 37 5.7	−45.79	16 18.84	0.065	14 56 45.95
Sat.	5	14 44 25.62	9.956	15 55 16.9	45.14	16 16.89	0.100	15 0 42.51
SUN.	6	14 48 24.96	9.991	16 13 12.2	44.47	16 14.10	0.135	15 4 39.06
Mon.	7	14 52 25.15	10.026	16 30 51.3	−43.78	16 10.46	0.170	15 8 35.62
Tues.	8	14 56 26.20	10.062	16 48 13.8	43.08	16 5.97	0.206	15 12 32.17
Wed.	9	15 0 28.10	10.097	17 5 19.2	42.36	16 0.63	0.241	15 16 28.73
Thur.	10	15 4 30.86	10.133	17 22 7.2	−41.63	15 54.43	0.277	15 20 25.29
Frid.	11	15 8 34.49	10.169	17 38 37.4	40.88	15 47.36	0.313	15 24 21.85
Sat.	12	15 12 38.99	10.205	17 54 49.4	40.11	15 39.42	0.349	15 28 18.40
SUN.	13	15 16 44.36	10.242	18 10 42.7	−39.33	15 30.60	0.386	15 32 14.96
Mon.	14	15 20 50.60	10.279	18 26 17.0	38.53	15 20.91	0.423	15 36 11.51
Tues.	15	15 24 57.70	10.314	18 41 32.0	37.71	15 10.37	0.458	15 40 8.07
Wed.	16	15 29 5.65	10.349	18 56 27.1	−36.88	14 58.98	0.493	15 44 4.63
Thur.	17	15 33 14.45	10.384	19 11 1.9	36.03	14 46.74	0.528	15 48 1.19
Frid.	18	15 37 24.09	10.419	19 25 16.1	35.16	14 33.65	0.563	15 51 57.74
Sat.	19	15 41 34.56	10.453	19 39 9.3	−34.27	14 19.74	0.597	15 55 54.30
SUN.	20	15 45 45.84	10.487	19 52 41.1	33.37	14 5.02	0.631	15 59 50.86
Mon.	21	15 49 57.93	10.520	20 5 51.1	32.45	13 49.49	0.664	16 3 47.42
Tues.	22	15 54 10.81	10.553	20 18 38.8	−31.52	13 33.16	0.697	16 7 43.97
Wed.	23	15 58 24.45	10.585	20 31 4.0	30.58	13 16.08	0.729	16 11 40.53
Thur.	24	16 2 38.85	10.616	20 43 6.3	29.62	12 58.24	0.760	16 15 37.09
Frid.	25	16 6 53.99	10.646	20 54 45.4	−28.64	12 39.66	0.790	16 19 33.65
Sat.	26	16 11 9.85	10.676	21 6 0.9	27.65	12 20.35	0.820	16 23 30.20
SUN.	27	16 15 26.42	10.705	21 16 52.4	26.65	12 0.34	0.849	16 27 26.76
Mon.	28	16 19 43.67	10.733	21 27 19.7	−25.63	11 39.65	0.877	16 31 23.32
Tues.	29	16 24 1.60	10.760	21 37 22.6	24.60	11 18.28	0.904	16 35 19.88
Wed.	30	16 28 20.17	10.787	21 47 0.7	23.56	10 56.26	0.931	16 39 16.43
Thur.	31	16 32 39.37	10.813	S. 21 56 13.7	−22.50	10 33.62	0.957	16 43 12.99

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 Hour, $+9^{s}.8565$. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	306	219 33 41.6	33 11.2	150.24	− 0.18	9.9964130	−47.0	9 13 32.78
2	307	220 33 48.2	33 17.7	150.31	− 0.06	9.9963011	46.3	9 9 36.87
3	308	221 33 56.4	33 25.8	150.38	+ 0.06	9.9961907	45.6	9 5 40.96
4	309	222 34 6.3	33 35.6	150.46	+ 0.20	9.9960820	−44.9	9 1 45.05
5	310	223 34 18.0	33 47.2	150.53	0.33	9.9959750	44.2	8 57 49.14
6	311	224 34 31.6	34 0.6	150.61	0.45	9.9958697	43.5	8 53 53.23
7	312	225 34 47.1	34 15.9	150.68	+ 0.56	9.9957662	−42.8	8 49 57.32
8	313	226 35 4.4	34 33.1	150.76	0.64	9.9956644	42.0	8 46 1.41
9	314	227 35 23.7	34 52.2	150.84	0.69	9.9955644	41.3	8 42 5.50
10	315	228 35 44.9	35 13.2	150.92	+ 0.72	9.9954661	−40.6	8 38 9.59
11	316	229 36 8.0	35 36.1	151.00	0.72	9.9953693	40.0	8 34 13.68
12	317	230 36 33.1	36 1.1	151.08	0.68	9.9952739	39.5	8 30 17.77
13	318	231 37 0.1	36 28.0	151.16	+ 0.62	9.9951799	−39.0	8 26 21.86
14	319	232 37 29.0	36 56.7	151.23	0.53	9.9950871	38.5	8 22 25.95
15	320	233 37 59.8	37 27.3	151.31	0.42	9.9949954	38.0	8 18 30.04
16	321	234 38 32.3	37 59.6	151.38	+ 0.29	9.9949048	−37.5	8 14 34.13
17	322	235 39 6.5	38 33.7	151.45	0.16	9.9948153	37.0	8 10 38.22
18	323	236 39 42.4	39 9.5	151.52	+ 0.03	9.9947269	36.6	8 6 42.31
19	324	237 40 19.9	39 46.8	151.59	− 0.10	9.9946394	−36.2	8 2 46.39
20	325	238 40 58.9	40 25.6	151.65	0.23	9.9945529	35.8	7 58 50.48
21	326	239 41 39.2	41 5.8	151.70	0.33	9.9944674	35.4	7 54 54.57
22	327	240 42 20.8	41 47.2	151.75	− 0.40	9.9943830	−34.9	7 50 58.66
23	328	241 43 3.5	42 29.7	151.80	0.44	9.9942998	34.4	7 47 2.74
24	329	242 43 47.3	43 13.3	151.85	0.46	9.9942179	33.8	7 43 6.83
25	330	243 44 32.2	43 58.0	151.90	− 0.45	9.9941374	−33.2	7 39 10.92
26	331	244 45 18.2	44 43.8	151.94	0.41	9.9940585	32.5	7 35 15.01
27	332	245 46 5.2	45 30.7	151.98	0.34	9.9939814	31.7	7 31 19.10
28	333	246 46 53.1	46 18.4	152.02	− 0.25	9.9939062	−30.9	7 27 23.19
29	334	247 47 41.9	47 7.0	152.06	0.14	9.9938330	30.0	7 23 27.28
30	335	248 48 31.6	47 56.5	152.09	− 0.01	9.9937621	29.1	7 19 31.37
31	336	249 49 22.2	48 46.9	152.13	+ 0.12	9.9936934	−28.1	7 15 35.45

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 1^{d}.0.

Diff. for 1 Hour,
— 9^{s}.8296.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 21.4	16 28.2	59 55.4	+2.15	60 20.1	+1.94	9 22.6	2.06	11.7
2	16 34.1	16 39.1	60 41.9	1.67	61 0.1	1.35	10 13.0	2.13	12.7
3	16 42.9	16 45.4	61 14.2	0.98	61 23.5	+0.57	11 5.8	2.26	13.7
4	16 46.6	16 46.4	61 27.9	+0.15	61 27.0	−0.30	12 2.1	2.41	14.7
5	16 44.7	16 41.7	61 20.9	−0.71	61 9.9	1.11	13 2.3	2.57	15.7
6	16 37.5	16 32.2	60 54.3	1.46	60 34.8	1.77	14 5.6	2.66	16.7
7	16 26.0	16 19.0	60 12.0	−2.01	59 46.5	−2.20	15 9.9	2.64	17.7
8	16 11.6	16 3.8	59 19.2	2.32	58 50.8	2.39	16 12.1	2.50	18.7
9	15 56.0	15 48.2	58 21.9	2.40	57 53.2	2.37	17 10.0	2.29	19.7
10	15 40.5	15 33.2	57 25.1	−2.30	56 58.2	−2.19	18 2.6	2.08	20.7
11	15 26.2	15 19.7	56 32.7	2.06	56 8.9	1.91	18 50.3	1.89	21.7
12	15 13.8	15 8.4	55 46.9	1.75	55 27.1	1.57	19 34.2	1.76	22.7
13	15 3.5	14 59.2	55 9.3	−1.40	54 53.5	−1.23	20 15.3	1.67	23.7
14	14 55.5	14 52.4	54 39.9	1.05	54 28.4	0.88	20 55.0	1.64	24.7
15	14 49.8	14 47.7	54 18.8	0.73	54 11.0	0.56	21 34.5	1.64	25.7
16	14 46.0	14 44.9	54 5.0	−0.43	54 0.7	−0.30	22 14.7	1.70	26.7
17	14 44.1	14 43.8	53 58.0	−0.17	53 56.8	−0.05	22 56.6	1.79	27.7
18	14 43.8	14 44.2	53 56.9	+0.07	53 58.3	+0.17	23 40.9	1.90	28.7
19	14 44.9	14 46.0	54 1.0	+0.28	54 4.9	+0.38	☌		0.0
20	14 47.4	14 49.2	54 10.1	0.48	54 16.5	0.58	0 28.2	2.02	1.0
21	14 51.2	14 53.6	54 24.1	0.68	54 32.9	0.79	1 18.2	2.13	2.0
22	14 56.4	14 59.6	54 43.1	+0.91	54 54.7	+1.02	2 10.3	2.19	3.0
23	15 3.1	15 7.0	55 7.6	1.14	55 22.1	1.27	3 3.4	2.21	4.0
24	15 11.4	15 16.1	55 38.0	1.39	55 55.5	1.52	3 56.1	2.16	5.0
25	15 21.3	15 26.9	56 14.5	+1.65	56 35.0	+1.77	4 47.5	2.09	6.0
26	15 32.8	15 39.1	56 56.9	1.88	57 20.0	1.97	5 37.0	2.02	7.0
27	15 45.7	15 52.5	57 44.2	2.05	58 9.2	2.10	6 25.1	1.97	8.0
28	15 59.4	16 6.3	58 34.6	+2.11	58 59.9	+2.09	7 12.4	1.96	9.0
29	16 13.1	16 19.5	59 24.7	2.02	59 48.4	1.90	8 0.2	2.01	10.0
30	16 25.5	16 30.8	60 10.3	1.73	60 29.9	1.50	8 49.9	2.12	11.0
31	16 35.3	16 38.9	60 46.4	+1.23	60 59.4	+0.90	9 42.9	2.29	12.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 48 46.69	2.1554	S. 5 7 55.2	16.672
1	23 50 56.04	2.1563	4 51 13.4	16.720
2	23 53 5.45	2.1572	4 34 28.8	16.766
3	23 55 14.91	2.1583	4 17 41.5	16.811
4	23 57 24.44	2.1595	4 0 51.5	16.854
5	23 59 34.05	2.1607	3 43 59.0	16.895
6	0 1 43.73	2.1620	3 27 4.1	16.935
7	0 3 53.49	2.1634	3 10 6.8	16.973
8	0 6 3.34	2.1648	2 53 7.3	17.009
9	0 8 13.27	2.1663	2 36 5.7	17.044
10	0 10 23.30	2.1680	2 19 2.0	17.077
11	0 12 33.43	2.1698	2 1 56.4	17.108
12	0 14 43.67	2.1716	1 44 49.0	17.138
13	0 16 54.02	2.1734	1 27 39.8	17.167
14	0 19 4.48	2.1753	1 10 29.0	17.193
15	0 21 15.05	2.1773	0 53 16.6	17.218
16	0 23 25.75	2.1795	0 36 2.8	17.241
17	0 25 36.59	2.1817	0 18 47.7	17.262
18	0 27 47.56	2.1840	S. 0 1 31.3	17.282
19	0 29 58.67	2.1864	N. 0 15 46.2	17.300
20	0 32 9.93	2.1888	0 33 4.7	17.315
21	0 34 21.33	2.1913	0 50 24.0	17.329
22	0 36 32.89	2.1940	1 7 44.1	17.342
23	0 38 44.61	2.1967	N. 1 25 5.0	17.353

WEDNESDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	0 40 56.49	2.1994	N. 1 42 26.5	17.362
1	0 43 8.54	2.2023	1 59 48.4	17.368
2	0 45 20.77	2.2053	2 17 10.6	17.373
3	0 47 33.18	2.2083	2 34 33.1	17.376
4	0 49 45.77	2.2114	2 51 55.7	17.377
5	0 51 58.55	2.2147	3 9 18.3	17.375
6	0 54 11.53	2.2180	3 26 40.7	17.373
7	0 56 24.71	2.2213	3 44 2.9	17.368
8	0 58 38.09	2.2247	4 1 24.8	17.362
9	1 0 51.68	2.2282	4 18 46.3	17.353
10	1 3 5.48	2.2318	4 36 7.2	17.342
11	1 5 19.50	2.2356	4 53 27.3	17.328
12	1 7 33.75	2.2394	5 10 46.6	17.314
13	1 9 48.23	2.2432	5 28 5.0	17.297
14	1 12 2.94	2.2472	5 45 22.3	17.278
15	1 14 17.89	2.2512	6 2 38.4	17.257
16	1 16 33.09	2.2553	6 19 53.2	17.234
17	1 18 48.53	2.2594	6 37 6.5	17.208
18	1 21 4.22	2.2637	6 54 18.2	17.181
19	1 23 20.17	2.2681	7 11 28.2	17.152
20	1 25 36.39	2.2725	7 28 36.4	17.121
21	1 27 52.87	2.2770	7 45 42.7	17.087
22	1 30 9.63	2.2816	8 2 46.9	17.052
23	1 32 26.66	2.2862	8 19 48.9	17.014
24	1 34 43.97	2.2909	N. 8 36 48.6	16.974

THURSDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 34 43.97	2.2909	N. 8 36 48.6	16.974
1	1 37 1.57	2.2956	8 53 45.8	16.932
2	1 39 19.45	2.3004	9 10 40.4	16.887
3	1 41 37.62	2.3053	9 27 32.3	16.841
4	1 43 56.09	2.3104	9 44 21.3	16.792
5	1 46 14.87	2.3155	10 1 7.3	16.741
6	1 48 33.95	2.3206	10 17 50.2	16.687
7	1 50 53.34	2.3257	10 34 29.8	16.632
8	1 53 13.04	2.3310	10 51 6.0	16.574
9	1 55 33.06	2.3363	11 7 38.7	16.514
10	1 57 53.40	2.3417	11 24 7.7	16.452
11	2 0 14.07	2.3472	11 40 32.9	16.387
12	2 2 35.06	2.3526	11 56 54.2	16.321
13	2 4 56.38	2.3581	12 13 11.4	16.252
14	2 7 18.04	2.3637	12 29 24.4	16.180
15	2 9 40.03	2.3694	12 45 33.0	16.106
16	2 12 2.37	2.3751	13 1 37.1	16.030
17	2 14 25.05	2.3808	13 17 36.6	15.952
18	2 16 48.07	2.3866	13 33 31.3	15.871
19	2 19 11.44	2.3925	13 49 21.1	15.788
20	2 21 35.17	2.3984	14 5 5.9	15.703
21	2 23 59.25	2.4043	14 20 45.5	15.616
22	2 26 23.69	2.4102	14 36 19.8	15.527
23	2 28 48.48	2.4162	N. 14 51 48.7	15.435

FRIDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 31 13.63	2.4222	N. 15 7 12.0	15.340
1	2 33 39.14	2.4283	15 22 29.5	15.243
2	2 36 5.02	2.4344	15 37 41.2	15.145
3	2 38 31.27	2.4406	15 52 46.9	15.043
4	2 40 57.89	2.4467	16 7 46.4	14.940
5	2 43 24.88	2.4528	16 22 39.7	14.835
6	2 45 52.23	2.4590	16 37 26.6	14.727
7	2 48 19.96	2.4652	16 52 6.9	14.616
8	2 50 48.06	2.4714	17 6 40.5	14.503
9	2 53 16.53	2.4776	17 21 7.3	14.389
10	2 55 45.37	2.4838	17 35 27.2	14.272
11	2 58 14.59	2.4901	17 49 39.9	14.152
12	3 0 44.18	2.4963	18 3 45.4	14.031
13	3 3 14.14	2.5025	18 17 43.6	13.907
14	3 5 44.48	2.5087	18 31 34.2	13.780
15	3 8 15.19	2.5149	18 45 17.2	13.652
16	3 10 46.27	2.5211	18 58 52.5	13.522
17	3 13 17.72	2.5273	19 12 19.9	13.390
18	3 15 49.55	2.5335	19 25 39.3	13.255
19	3 18 21.74	2.5396	19 38 50.5	13.118
20	3 20 54.30	2.5457	19 51 53.5	12.980
21	3 23 27.22	2.5517	20 4 48.1	12.839
22	3 26 0.50	2.5577	20 17 34.2	12.696
23	3 28 34.14	2.5638	20 30 11.6	12.550
24	3 31 8.15	2.5698	N. 20 42 40.2	12.403

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 5.					MONDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	3 31 8.15	2.5698	N.20 42 40.2	12.403	0	5 39 38.52	2.7335	N.27 16 58.4	3.575
1	3 33 42.52	2.5756	20 55 0.0	12.254	1	5 42 22.52	2.7331	27 20 26.8	3.371
2	3 36 17.23	2.5814	21 7 10.7	12.102	2	5 45 6.49	2.7325	27 23 42.9	3.166
3	3 38 52.29	2.5872	21 19 12.3	11.949	3	5 47 50.42	2.7317	27 26 46.7	2.962
4	3 41 27.70	2.5930	21 31 4.6	11.794	4	5 50 34.29	2.7307	27 29 38.3	2.759
5	3 44 3.45	2.5987	21 42 47.6	11.637	5	5 53 18.10	2.7295	27 32 17.8	2.556
6	3 46 39.55	2.6044	21 54 21.1	11.478	6	5 56 1.83	2.7281	27 34 45.1	2.353
7	3 49 15.98	2.6099	22 5 45.0	11.317	7	5 58 45.47	2.7265	27 37 0.2	2.151
8	3 51 52.74	2.6154	22 16 59.2	11.155	8	6 1 29.01	2.7248	27 39 3.2	1.948
9	3 54 29.83	2.6208	22 28 3.6	10.991	9	6 4 12.45	2.7229	27 40 54.0	1.746
10	3 57 7.24	2.6262	22 38 58.1	10.824	10	6 6 55.76	2.7208	27 42 32.7	1.544
11	3 59 44.97	2.6314	22 49 42.5	10.656	11	6 9 38.94	2.7184	27 43 59.3	1.342
12	4 2 23.01	2.6365	23 0 16.8	10.487	12	6 12 21.97	2.7158	27 45 13.8	1.142
13	4 5 1.35	2.6416	23 10 40.9	10.316	13	6 15 4.84	2.7131	27 46 16.3	0.942
14	4 7 40.00	2.6467	23 20 54.7	10.142	14	6 17 47.55	2.7103	27 47 6.8	0.742
15	4 10 18.95	2.6516	23 30 58.0	9.968	15	6 20 30.08	2.7073	27 47 45.4	0.543
16	4 12 58.19	2.6563	23 40 50.8	9.792	16	6 23 12.42	2.7040	27 48 12.0	0.345
17	4 15 37.71	2.6609	23 50 33.0	9.613	17	6 25 54.56	2.7007	27 48 26.8	+ 0.147
18	4 18 17.50	2.6654	24 0 4.4	9.433	18	6 28 36.50	2.6971	27 48 29.7	− 0.049
19	4 20 57.56	2.6699	24 9 25.0	9.253	19	6 31 18.21	2.6932	27 48 20.9	0.245
20	4 23 37.89	2.6742	24 18 34.8	9.072	20	6 33 59.69	2.6893	27 48 0.3	0.441
21	4 26 18.47	2.6783	24 27 33.6	8.888	21	6 36 40.93	2.6852	27 47 28.0	0.635
22	4 28 59.29	2.6824	24 36 21.4	8.703	22	6 39 21.92	2.6809	27 46 44.1	0.828
23	4 31 40.36	2.6864	N.24 44 58.0	8.517	23	6 42 2.64	2.6764	N.27 45 48.6	1.021
	SUNDAY 6.					TUESDAY 8.			
0	4 34 21.66	2.6902	N.24 53 23.4	8.330	0	6 44 43.09	2.6718	N.27 44 41.6	1.212
1	4 37 3.18	2.6938	25 1 37.6	8.142	1	6 47 23.26	2.6671	27 43 23.2	1.402
2	4 39 44.92	2.6973	25 9 40.4	7.951	2	6 50 3.14	2.6622	27 41 53.3	1.592
3	4 42 26.86	2.7007	25 17 31.7	7.759	3	6 52 42.73	2.6572	27 40 12.1	1.780
4	4 45 9.00	2.7039	25 25 11.5	7.567	4	6 55 22.01	2.6519	27 38 19.7	1.967
5	4 47 51.33	2.7071	25 32 39.8	7.375	5	6 58 0.96	2.6464	27 36 16.1	2.153
6	4 50 33.85	2.7100	25 39 56.5	7.181	6	7 0 39.58	2.6409	27 34 1.4	2.338
7	4 53 16.53	2.7127	25 47 1.5	6.986	7	7 3 17.87	2.6353	27 31 35.6	2.521
8	4 55 59.37	2.7153	25 53 54.8	6.790	8	7 5 55.82	2.6295	27 28 58.9	2.702
9	4 58 42.37	2.7178	26 0 36.3	6.593	9	7 8 33.41	2.6236	27 26 11.3	2.883
10	5 1 25.51	2.7201	26 7 5.9	6.395	10	7 11 10.65	2.6176	27 23 12.9	3.063
11	5 4 8.78	2.7222	26 13 23.7	6.197	11	7 13 47.52	2.6113	27 20 3.7	3.242
12	5 6 52.17	2.7241	26 19 29.6	5.998	12	7 16 24.01	2.6050	27 16 43.9	3.418
13	5 9 35.67	2.7259	26 25 23.5	5.798	13	7 19 0.12	2.5986	27 13 13.5	3.594
14	5 12 19.28	2.7276	26 31 5.4	5.598	14	7 21 35.84	2.5920	27 9 32.6	3.767
15	5 15 2.98	2.7290	26 36 35.3	5.397	15	7 24 11.16	2.5853	27 5 41.4	3.939
16	5 17 46.76	2.7302	26 41 53.1	5.196	16	7 26 46.08	2.5786	27 1 39.9	4.111
17	5 20 30.60	2.7312	26 46 58.8	4.994	17	7 29 20.59	2.5717	26 57 28.1	4.281
18	5 23 14.50	2.7321	26 51 52.4	4.792	18	7 31 54.68	2.5647	26 53 6.2	4.448
19	5 25 58.45	2.7328	26 56 33.8	4.589	19	7 34 28.35	2.5576	26 48 34.3	4.615
20	5 28 42.44	2.7333	27 1 3.1	4.386	20	7 37 1.59	2.5504	26 43 52.4	4.780
21	5 31 26.45	2.7336	27 5 20.2	4.183	21	7 39 34.40	2.5432	26 39 0.7	4.943
22	5 34 10.47	2.7337	27 9 25.1	3.980	22	7 42 6.77	2.5358	26 33 59.2	5.106
23	5 36 54.50	2.7337	27 13 17.8	3.778	23	7 44 38.69	2.5283	26 28 48.0	5.266
24	5 39 38.52	2.7335	N.27 16 58.4	3.575	24	7 47 10.16	2.5208	N.26 23 27.3	5.424

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	7 47 10.16	2.5208	N.26 23 27.3	5.494
1	7 49 41.18	2.5132	26 17 57.1	5.582
2	7 52 11.74	2.5055	26 12 17.5	5.737
3	7 54 41.84	2.4977	26 6 28.7	5.890
4	7 57 11.47	2.4899	26 0 30.7	6.042
5	7 59 40.63	2.4821	25 54 23.6	6.193
6	8 2 9.32	2.4742	25 48 7.5	6.342
7	8 4 37.53	2.4662	25 41 42.5	6.489
8	8 7 5.26	2.4582	25 35 8.8	6.634
9	8 9 32.52	2.4502	25 28 26.4	6.778
10	8 11 59.29	2.4421	25 21 35.4	6.921
11	8 14 25.57	2.4339	25 14 35.9	7.062
12	8 16 51.36	2.4258	25 7 28.0	7.200
13	8 19 16.66	2.4176	25 0 11.9	7.337
14	8 21 41.47	2.4093	24 52 47.6	7.472
15	8 24 5.78	2.4010	24 45 15.2	7.606
16	8 26 29.59	2.3927	24 37 34.9	7.737
17	8 28 52.91	2.3845	24 29 46.7	7.868
18	8 31 15.73	2.3762	24 21 50.7	7.997
19	8 33 38.05	2.3679	24 13 47.1	8.123
20	8 35 59.87	2.3596	24 5 35.9	8.249
21	8 38 21.20	2.3513	23 57 17.2	8.373
22	8 40 42.03	2.3429	23 48 51.1	8.495
23	8 43 2.35	2.3345	N.23 40 17.8	8.615

THURSDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	8 45 22.17	2.3262	N.23 31 37.3	8.733
1	8 47 41.49	2.3179	23 22 49.8	8.850
2	8 50 0.32	2.3097	23 13 55.3	8.966
3	8 52 18.65	2.3013	23 4 53.9	9.079
4	8 54 36.48	2.2930	22 55 45.8	9.191
5	8 56 53.81	2.2848	22 46 31.0	9.302
6	8 59 10.65	2.2766	22 37 9.6	9.411
7	9 1 27.00	2.2683	22 27 41.7	9.518
8	9 3 42.85	2.2601	22 18 7.5	9.623
9	9 5 58.21	2.2520	22 8 27.0	9.727
10	9 8 13.09	2.2439	21 58 40.3	9.829
11	9 10 27.48	2.2358	21 48 47.5	9.929
12	9 12 41.38	2.2277	21 38 48.8	10.028
13	9 14 54.80	2.2197	21 28 44.2	10.126
14	9 17 7.74	2.2117	21 18 33.7	10.222
15	9 19 20.20	2.2037	21 8 17.5	10.317
16	9 21 32.19	2.1958	20 57 55.7	10.410
17	9 23 43.70	2.1879	20 47 28.3	10.502
18	9 25 54.74	2.1801	20 36 55.5	10.592
19	9 28 5.31	2.1723	20 26 17.3	10.680
20	9 30 15.42	2.1646	20 15 33.9	10.767
21	9 32 25.07	2.1570	20 4 45.3	10.853
22	9 34 34.26	2.1494	19 53 51.6	10.937
23	9 36 43.00	2.1418	19 42 52.9	11.018
24	9 38 51.28	2.1342	N.19 31 49.4	11.099

FRIDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	9 38 51.28	2.1342	N.19 31 49.4	11.099
1	9 40 59.11	2.1268	19 20 41.0	11.180
2	9 43 6.50	2.1195	19 9 27.8	11.258
3	9 45 13.45	2.1122	18 58 10.0	11.335
4	9 47 19.96	2.1049	18 46 47.6	11.411
5	9 49 26.04	2.0977	18 35 20.7	11.485
6	9 51 31.69	2.0906	18 23 49.4	11.557
7	9 53 36.91	2.0835	18 12 13.8	11.629
8	9 55 41.71	2.0765	18 0 33.9	11.700
9	9 57 46.09	2.0695	17 48 49.8	11.769
10	9 59 50.05	2.0626	17 37 1.6	11.837
11	10 1 53.60	2.0558	17 25 9.4	11.903
12	10 3 56.75	2.0491	17 13 13.3	11.968
13	10 5 59.50	2.0425	17 1 13.3	12.032
14	10 8 1.85	2.0358	16 49 9.5	12.094
15	10 10 3.80	2.0292	16 37 2.0	12.155
16	10 12 5.36	2.0228	16 24 50.9	12.215
17	10 14 6.54	2.0165	16 12 36.2	12.274
18	10 16 7.34	2.0102	16 0 18.0	12.332
19	10 18 7.77	2.0040	15 47 56.4	12.388
20	10 20 7.82	1.9978	15 35 31.4	12.444
21	10 22 7.50	1.9917	15 23 3.1	12.498
22	10 24 6.82	1.9858	15 10 31.6	12.551
23	10 26 5.79	1.9799	N.14 57 57.0	12.602

SATURDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 28 4.41	1.9741	N.14 45 19.3	12.653
1	10 30 2.68	1.9683	14 32 38.6	12.702
2	10 32 0.60	1.9625	14 19 55.0	12.751
3	10 33 58.18	1.9568	14 7 8.5	12.798
4	10 35 55.42	1.9513	13 54 19.2	12.845
5	10 37 52.34	1.9459	13 41 27.1	12.890
6	10 39 48.93	1.9405	13 28 32.4	12.934
7	10 41 45.20	1.9352	13 15 35.1	12.977
8	10 43 41.16	1.9300	13 2 35.2	13.019
9	10 45 36.80	1.9248	12 49 32.8	13.060
10	10 47 32.14	1.9198	12 36 28.0	13.100
11	10 49 27.18	1.9148	12 23 20.8	13.138
12	10 51 21.92	1.9099	12 10 11.4	13.176
13	10 53 16.37	1.9051	11 56 59.7	13.213
14	10 55 10.54	1.9004	11 43 45.8	13.250
15	10 57 4.42	1.8957	11 30 29.7	13.285
16	10 58 58.02	1.8911	11 17 11.6	13.318
17	11 0 51.35	1.8866	11 3 51.5	13.351
18	11 2 44.42	1.8822	10 50 29.5	13.383
19	11 4 37.22	1.8779	10 37 5.6	13.414
20	11 6 29.77	1.8736	10 23 39.8	13.445
21	11 8 22.06	1.8694	10 10 12.2	13.474
22	11 10 14.10	1.8653	9 56 42.9	13.502
23	11 12 5.90	1.8614	9 43 11.9	13.530
24	11 13 57.47	1.8575	N. 9 29 39.3	13.556

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 13 57.47	1.8575	N. 9 29 39.3	13.556
1	11 15 48.80	1.8536	9 16 5.2	13.582
2	11 17 39.90	1.8498	9 2 29.5	13.607
3	11 19 30.78	1.8462	8 48 52.3	13.632
4	11 21 21.44	1.8425	8 35 13.7	13.655
5	11 23 11.88	1.8389	8 21 33.7	13.676
6	11 25 2.11	1.8355	8 7 52.5	13.697
7	11 26 52.14	1.8322	7 54 10.0	13.718
8	11 28 41.97	1.8289	7 40 26.3	13.738
9	11 30 31.60	1.8256	7 26 41.4	13.757
10	11 32 21.04	1.8225	7 12 55.4	13.775
11	11 34 10.30	1.8194	6 59 8.4	13.792
12	11 35 59.37	1.8164	6 45 20.4	13.808
13	11 37 48.27	1.8136	6 31 31.4	13.824
14	11 39 37.00	1.8108	6 17 41.5	13.839
15	11 41 25.56	1.8080	6 3 50.7	13.853
16	11 43 13.96	1.8054	5 49 59.1	13.866
17	11 45 2.21	1.8028	5 36 6.8	13.878
18	11 46 50.30	1.8002	5 22 13.7	13.891
19	11 48 38.24	1.7978	5 8 19.9	13.902
20	11 50 26.04	1.7956	4 54 25.5	13.911
21	11 52 13.71	1.7933	4 40 30.6	13.920
22	11 54 1.24	1.7911	4 26 35.1	13.929
23	11 55 48.64	1.7890	N. 4 12 39.1	13.937

MONDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	11 57 35.92	1.7870	N. 3 58 42.6	13.945
1	11 59 23.08	1.7850	3 44 45.7	13.951
2	12 1 10.12	1.7831	3 30 48.5	13.956
3	12 2 57.05	1.7813	3 16 51.0	13.961
4	12 4 43.87	1.7796	3 2 53.2	13.965
5	12 6 30.60	1.7780	2 48 55.2	13.968
6	12 8 17.23	1.7764	2 34 57.0	13.971
7	12 10 3.77	1.7749	2 20 58.7	13.973
8	12 11 50.22	1.7734	2 7 0.3	13.974
9	12 13 36.58	1.7721	1 53 1.8	13.975
10	12 15 22.87	1.7708	1 39 3.3	13.974
11	12 17 9.08	1.7696	1 25 4.9	13.973
12	12 18 55.22	1.7684	1 11 6.6	13.971
13	12 20 41.29	1.7674	0 57 8.4	13.969
14	12 22 27.31	1.7665	0 43 10.4	13.966
15	12 24 13.27	1.7656	0 29 12.5	13.962
16	12 25 59.18	1.7647	0 15 14.9	13.957
17	12 27 45.04	1.7639	N. 0 1 17.7	13.951
18	12 29 30.85	1.7632	S. 0 12 39.2	13.945
19	12 31 16.62	1.7626	0 26 35.7	13.939
20	12 33 2.36	1.7621	0 40 31.8	13.932
21	12 34 48.08	1.7617	0 54 27.5	13.924
22	12 36 33.77	1.7613	1 8 22.7	13.915
23	12 38 19.44	1.7609	1 22 17.3	13.904
24	12 40 5.08	1.7606	S. 1 36 11.2	13.893

TUESDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 40 5.08	1.7606	S. 1 36 11.2	13.893
1	12 41 50.71	1.7605	1 50 4.5	13.883
2	12 43 36.34	1.7604	2 3 57.1	13.872
3	12 45 21.96	1.7603	2 17 49.1	13.860
4	12 47 7.58	1.7604	2 31 40.3	13.847
5	12 48 53.21	1.7605	2 45 30.7	13.833
6	12 50 38.84	1.7606	2 59 20.2	13.818
7	12 52 24.48	1.7608	3 13 8.9	13.803
8	12 54 10.14	1.7612	3 26 56.6	13.787
9	12 55 55.83	1.7617	3 40 43.3	13.770
10	12 57 41.54	1.7621	3 54 29.0	13.752
11	12 59 27.28	1.7625	4 8 13.6	13.735
12	13 1 13.04	1.7630	4 21 57.2	13.717
13	13 2 58.84	1.7637	4 35 39.6	13.697
14	13 4 44.69	1.7645	4 49 20.8	13.677
15	13 6 30.58	1.7653	5 3 0.8	13.656
16	13 8 16.52	1.7662	5 16 39.5	13.634
17	13 10 2.52	1.7671	5 30 16.9	13.611
18	13 11 48.57	1.7680	5 43 52.9	13.588
19	13 13 34.68	1.7691	5 57 27.5	13.565
20	13 15 20.86	1.7702	6 11 0.7	13.541
21	13 17 7.11	1.7714	6 24 32.4	13.515
22	13 18 53.43	1.7727	6 38 2.5	13.489
23	13 20 39.83	1.7740	S. 6 51 31.0	13.463

WEDNESDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 22 26.31	1.7753	S. 7 4 58.0	13.436
1	13 24 12.87	1.7767	7 18 23.3	13.408
2	13 25 59.52	1.7783	7 31 46.9	13.378
3	13 27 46.27	1.7800	7 45 8.7	13.348
4	13 29 33.12	1.7816	7 58 28.7	13.318
5	13 31 20.06	1.7832	8 11 46.9	13.287
6	13 33 7.10	1.7849	8 25 3.2	13.256
7	13 34 54.25	1.7868	8 38 17.6	13.223
8	13 36 41.52	1.7887	8 51 30.0	13.189
9	13 38 28.90	1.7907	9 4 40.3	13.155
10	13 40 16.40	1.7927	9 17 48.6	13.121
11	13 42 4.02	1.7947	9 30 54.8	13.085
12	13 43 51.76	1.7968	9 43 58.8	13.048
13	13 45 39.63	1.7990	9 57 0.6	13.012
14	13 47 27.64	1.8013	10 10 0.2	12.974
15	13 49 15.79	1.8037	10 22 57.5	12.936
16	13 51 4.08	1.8060	10 35 52.5	12.897
17	13 52 52.51	1.8083	10 48 45.1	12.856
18	13 54 41.08	1.8107	11 1 35.2	12.815
19	13 56 29.80	1.8133	11 14 22.9	12.773
20	13 58 18.68	1.8160	11 27 8.0	12.731
21	14 0 7.72	1.8187	11 39 50.6	12.688
22	14 1 56.92	1.8213	11 52 30.6	12.644
23	14 3 46.28	1.8240	12 5 7.9	12.598
24	14 5 35.80	1.8268	S. 12 17 42.4	12.552

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 17.					SATURDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	14 5 35.80	1.8268	S. 12 17 42.4	12.552	0	15 37 25.49	2.0136	S. 21 11 44.1	9.361
1	14 7 25.50	1.8297	12 30 14.2	12.506	1	15 39 26.45	2.0182	21 21 3.1	9.272
2	14 9 15.37	1.8327	12 42 43.2	12.459	2	15 41 27.68	2.0228	21 30 16.8	9.183
3	14 11 5.42	1.8357	12 55 9.3	12.411	3	15 43 29.19	2.0275	21 39 25.1	9.093
4	14 12 55.65	1.8387	13 7 32.5	12.362	4	15 45 30.98	2.0321	21 48 27.9	9.002
5	14 14 46.06	1.8418	13 19 52.8	12.313	5	15 47 33.04	2.0368	21 57 25.3	8.910
6	14 16 36.66	1.8449	13 32 10.1	12.263	6	15 49 35.39	2.0415	22 6 17.1	8.817
7	14 18 27.45	1.8481	13 44 24.4	12.211	7	15 51 38.02	2.0461	22 15 3.3	8.723
8	14 20 18.43	1.8513	13 56 35.5	12.158	8	15 53 40.92	2.0507	22 23 43.8	8.628
9	14 22 9.61	1.8546	14 8 43.4	12.105	9	15 55 44.10	2.0553	22 32 18.6	8.532
10	14 24 0.99	1.8580	14 20 48.1	12.052	10	15 57 47.56	2.0600	22 40 47.6	8.435
11	14 25 52.57	1.8613	14 32 49.6	11.997	11	15 59 51.30	2.0647	22 49 10.8	8.337
12	14 27 44.35	1.8647	14 44 47.8	11.942	12	16 1 55.33	2.0694	22 57 28.1	8.239
13	14 29 36.34	1.8682	14 56 42.6	11.886	13	16 3 59.63	2.0740	23 5 39.5	8.140
14	14 31 28.54	1.8718	15 8 34.1	11.829	14	16 6 4.21	2.0787	23 13 44.9	8.039
15	14 33 20.96	1.8754	15 20 22.1	11.771	15	16 8 9.07	2.0833	23 21 44.2	7.937
16	14 35 13.59	1.8790	15 32 6.6	11.712	16	16 10 14.21	2.0880	23 29 37.4	7.835
17	14 37 6.44	1.8826	15 43 47.5	11.652	17	16 12 19.63	2.0926	23 37 24.4	7.732
18	14 38 59.50	1.8863	15 55 24.8	11.591	18	16 14 25.32	2.0972	23 45 5.2	7.628
19	14 40 52.79	1.8901	16 6 58.4	11.530	19	16 16 31.29	2.1017	23 52 39.8	7.523
20	14 42 46.31	1.8939	16 18 28.4	11.468	20	16 18 37.53	2.1063	24 0 8.0	7.417
21	14 44 40.06	1.8977	16 29 54.6	11.405	21	16 20 44.05	2.1109	24 7 29.8	7.310
22	14 46 34.04	1.9016	16 41 17.0	11.341	22	16 22 50.84	2.1154	24 14 45.2	7.203
23	14 48 28.25	1.9055	S. 16 52 35.5	11.275	23	16 24 57.90	2.1200	S. 24 21 54.2	7.095
	FRIDAY 18.					SUNDAY 20.			
0	14 50 22.70	1.9095	S. 17 3 50.0	11.209	0	16 27 5.24	2.1245	S. 24 28 56.6	6.985
1	14 52 17.39	1.9135	17 15 0.6	11.142	1	16 29 12.84	2.1289	24 35 52.4	6.875
2	14 54 12.32	1.9175	17 26 7.1	11.075	2	16 31 20.71	2.1334	24 42 41.6	6.764
3	14 56 7.49	1.9216	17 37 9.6	11.007	3	16 33 28.85	2.1378	24 49 24.1	6.652
4	14 58 2.91	1.9257	17 48 8.0	10.938	4	16 35 37.25	2.1423	24 55 59.8	6.539
5	14 59 58.57	1.9298	17 59 2.2	10.867	5	16 37 45.92	2.1467	25 2 28.8	6.426
6	15 1 54.48	1.9339	18 9 52.1	10.796	6	16 39 54.85	2.1510	25 8 51.0	6.312
7	15 3 50.64	1.9382	18 20 37.7	10.724	7	16 42 4.04	2.1552	25 15 6.3	6.197
8	15 5 47.06	1.9424	18 31 19.0	10.652	8	16 44 13.48	2.1595	25 21 14.6	6.080
9	15 7 43.73	1.9467	18 41 55.9	10.578	9	16 46 23.18	2.1637	25 27 15.9	5.963
10	15 9 40.66	1.9510	18 52 28.3	10.503	10	16 48 33.13	2.1680	25 33 10.1	5.845
11	15 11 37.85	1.9553	19 2 56.3	10.428	11	16 50 43.34	2.1722	25 38 57.3	5.727
12	15 13 35.29	1.9596	19 13 19.7	10.351	12	16 52 53.80	2.1763	25 44 37.4	5.608
13	15 15 33.00	1.9640	19 23 38.4	10.273	13	16 55 4.50	2.1803	25 50 10.3	5.488
14	15 17 30.97	1.9684	19 33 52.5	10.196	14	16 57 15.44	2.1843	25 55 35.9	5.367
15	15 19 29.21	1.9729	19 44 1.9	10.117	15	16 59 26.62	2.1883	26 0 54.3	5.246
16	15 21 27.72	1.9773	19 54 6.5	10.036	16	17 1 38.04	2.1923	26 6 5.4	5.123
17	15 23 26.49	1.9817	20 4 6.2	9.954	17	17 3 49.70	2.1962	26 11 9.1	4.999
18	15 25 25.53	1.9862	20 14 1.0	9.872	18	17 6 1.59	2.2001	26 16 5.3	4.875
19	15 27 24.84	1.9907	20 23 50.9	9.790	19	17 8 13.71	2.2038	26 20 54.1	4.751
20	15 29 24.42	1.9953	20 33 35.8	9.706	20	17 10 26.05	2.2075	26 25 35.4	4.626
21	15 31 24.28	1.9999	20 43 15.6	9.621	21	17 12 38.61	2.2112	26 30 9.2	4.500
22	15 33 24.41	2.0044	20 52 50.3	9.535	22	17 14 51.39	2.2148	26 34 35.4	4.373
23	15 35 24.81	2.0090	21 2 19.8	9.448	23	17 17 4.39	2.2184	26 38 53.9	4.245
24	15 37 25.49	2.0136	S. 21 11 44.1	9.361	24	17 19 17.60	2.2219	S. 26 43 4.8	4.117

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 21.					**WEDNESDAY 23.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	17 19 17.60	2.2219	S.26 43 4.8	4.117	0	19 8 35.12	2.3003	S.27 23 32.7	2.550
1	17 21 31.02	2.2253	26 47 8.0	3.988	1	19 10 53.13	2.2999	27 20 55.4	2.693
2	17 23 44.64	2.2287	26 51 3.4	3.859	2	19 13 11.11	2.2993	27 18 9.5	2.836
3	17 25 58.46	2.2320	26 54 51.1	3.729	3	19 15 29.05	2.2987	27 15 15.0	2.979
4	17 28 12.48	2.2352	26 58 30.9	3.598	4	19 17 46.95	2.2980	27 12 12.0	3.122
5	17 30 26.69	2.2385	27 2 2.8	3.467	5	19 20 4.81	2.2973	27 9 0.4	3.265
6	17 32 41.10	2.2417	27 5 26.9	3.336	6	19 22 22.63	2.2966	27 5 40.2	3.407
7	17 34 55.69	2.2447	27 8 43.1	3.203	7	19 24 40.40	2.2957	27 2 11.5	3.549
8	17 37 10.46	2.2476	27 11 51.2	3.069	8	19 26 58.11	2.2946	26 58 34.3	3.691
9	17 39 25.40	2.2505	27 14 51.3	2.935	9	19 29 15.75	2.2935	26 54 48.6	3.833
10	17 41 40.52	2.2534	27 17 43.4	2.801	10	19 31 33.33	2.2924	26 50 54.4	3.974
11	17 43 55.81	2.2562	27 20 27.4	2.667	11	19 33 50.84	2.2912	26 46 51.7	4.115
12	17 46 11.26	2.2588	27 23 3.4	2.532	12	19 36 8.27	2.2898	26 42 40.6	4.256
13	17 48 26.87	2.2614	27 25 31.2	2.395	13	19 38 25.62	2.2885	26 38 21.0	4.397
14	17 50 42.63	2.2640	27 27 50.8	2.259	14	19 40 42.89	2.2872	26 33 53.0	4.538
15	17 52 58.55	2.2665	27 30 2.3	2.123	15	19 43 0.08	2.2857	26 29 16.5	4.678
16	17 55 14.61	2.2688	27 32 5.6	1.986	16	19 45 17.18	2.2842	26 24 31.6	4.817
17	17 57 30.81	2.2711	27 34 0.6	1.848	17	19 47 34.18	2.2825	26 19 38.4	4.956
18	17 59 47.14	2.2733	27 35 47.3	1.709	18	19 49 51.08	2.2808	26 14 36.9	5.095
19	18 2 3.60	2.2754	27 37 25.7	1.571	19	19 52 7.88	2.2791	26 9 27.0	5.234
20	18 4 20.19	2.2776	27 38 55.8	1.432	20	19 54 24.57	2.2773	26 4 8.8	5.372
21	18 6 36.91	2.2796	27 40 17.6	1.293	21	19 56 41.16	2.2755	25 58 42.4	5.509
22	18 8 53.74	2.2814	27 41 31.0	1.153	22	19 58 57.63	2.2735	25 53 7.7	5.647
23	18 11 10.68	2.2832	S.27 42 36.0	1.013	23	20 1 13.98	2.2715	S.25 47 24.7	5.785
	TUESDAY 22.					**THURSDAY 24.**			
0	18 13 27.73	2.2850	S.27 43 32.6	0.873	0	20 3 30.21	2.2695	S.25 41 33.5	5.922
1	18 15 44.88	2.2866	27 44 20.8	0.733	1	20 5 46.32	2.2674	25 35 34.1	6.057
2	18 18 2.12	2.2881	27 45 0.5	0.592	2	20 8 2.30	2.2653	25 29 26.6	6.192
3	18 20 19.45	2.2896	27 45 31.8	0.451	3	20 10 18.15	2.2631	25 23 11.0	6.327
4	18 22 36.87	2.2910	27 45 54.6	0.309	4	20 12 33.87	2.2608	25 16 47.3	6.462
5	18 24 54.37	2.2922	27 46 8.9	0.166	5	20 14 49.45	2.2586	25 10 15.6	6.596
6	18 27 11.94	2.2934	27 46 14.6	− 0.024	6	20 17 4.90	2.2563	25 3 35.8	6.730
7	18 29 29.58	2.2946	27 46 11.8	+ 0.117	7	20 19 20.21	2.2539	24 56 48.0	6.863
8	18 31 47.29	2.2957	27 46 0.5	0.259	8	20 21 35.37	2.2515	24 49 52.3	6.995
9	18 34 5.06	2.2966	27 45 40.7	0.402	9	20 23 50.39	2.2491	24 42 48.6	7.127
10	18 36 22.88	2.2974	27 45 12.3	0.545	10	20 26 5.26	2.2466	24 35 37.0	7.258
11	18 38 40.75	2.2983	27 44 35.3	0.688	11	20 28 19.98	2.2440	24 28 17.6	7.389
12	18 40 58.66	2.2988	27 43 49.8	0.831	12	20 30 34.54	2.2414	24 20 50.3	7.520
13	18 43 16.61	2.2995	27 42 55.6	0.974	13	20 32 48.95	2.2388	24 13 15.2	7.649
14	18 45 34.60	2.3000	27 41 52.9	1.117	14	20 35 3.20	2.2363	24 5 32.4	7.778
15	18 47 52.61	2.3004	27 40 41.6	1.260	15	20 37 17.30	2.2337	23 57 41.9	7.906
16	18 50 10.64	2.3007	27 39 21.7	1.403	16	20 39 31.24	2.2310	23 49 43.7	8.034
17	18 52 28.69	2.3010	27 37 53.2	1.547	17	20 41 45.02	2.2282	23 41 37.8	8.162
18	18 54 46.76	2.3012	27 36 16.1	1.690	18	20 43 58.63	2.2255	23 33 24.3	8.288
19	18 57 4.83	2.3012	27 34 30.4	1.833	19	20 46 12.08	2.2227	23 25 3.3	8.413
20	18 59 22.91	2.3012	27 32 36.1	1.977	20	20 48 25.36	2.2200	23 16 34.8	8.538
21	19 1 40.98	2.3011	27 30 33.1	2.121	21	20 50 38.48	2.2172	23 7 58.7	8.663
22	19 3 59.04	2.3009	27 28 21.5	2.264	22	20 52 51.43	2.2144	22 59 15.2	8.787
23	19 6 17.09	2.3007	27 26 1.4	2.407	23	20 55 4.21	2.2116	22 50 24.3	8.909
24	19 8 35.12	2.3003	S.27 23 32.7	2.550	24	20 57 16.82	2.2087	S.22 41 26.1	9.031

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
		FRIDAY 25.					SUNDAY 27.		
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	20 57 16.82	2.2087	S. 22 41 26.1	9.031	0	22 40 11.89	2.0899	S. 13 21 57.2	13.951
1	20 59 29.26	2.2059	22 32 20.6	9.153	1	22 42 17.24	2.0885	13 7 57.7	14.031
2	21 1 41.53	2.2031	22 23 7.8	9.274	2	22 44 22.51	2.0871	12 53 53.5	14.109
3	21 3 53.63	2.2002	22 13 47.7	9.395	3	22 46 27.69	2.0857	12 39 44.6	14.187
4	21 6 5.56	2.1973	22 4 20.4	9.514	4	22 48 32.79	2.0843	12 25 31.0	14.265
5	21 8 17.31	2.1944	21 54 46.0	9.633	5	22 50 37.81	2.0831	12 11 12.8	14.342
6	21 10 28.89	2.1916	21 45 4.5	9.751	6	22 52 42.76	2.0819	11 56 50.0	14.417
7	21 12 40.30	2.1887	21 35 15.9	9.868	7	22 54 47.64	2.0807	11 42 22.7	14.492
8	21 14 51.53	2.1859	21 25 20.3	9.984	8	22 56 52.45	2.0796	11 27 51.0	14.565
9	21 17 2.60	2.1831	21 15 17.8	10.100	9	22 58 57.19	2.0785	11 13 14.9	14.637
10	21 19 13.50	2.1802	21 5 8.3	10.215	10	23 1 1.87	2.0776	10 58 34.5	14.708
11	21 21 24.22	2.1773	20 54 52.0	10.329	11	23 3 6.50	2.0767	10 43 49.9	14.778
12	21 23 34.77	2.1744	20 44 28.9	10.442	12	23 5 11.08	2.0759	10 29 1.1	14.847
13	21 25 45.15	2.1716	20 33 59.0	10.555	13	23 7 15.61	2.0752	10 14 8.2	14.916
14	21 27 55.36	2.1687	20 23 22.3	10.667	14	23 9 20.10	2.0746	9 59 11.2	14.983
15	21 30 5.40	2.1659	20 12 39.0	10.777	15	23 11 24.56	2.0740	9 44 10.2	15.049
16	21 32 15.27	2.1632	20 1 49.1	10.887	16	23 13 28.98	2.0734	9 29 5.3	15.114
17	21 34 24.98	2.1604	19 50 52.6	10.997	17	23 15 33.37	2.0730	9 13 56.5	15.177
18	21 36 34.52	2.1576	19 39 49.5	11.106	18	23 17 37.74	2.0727	8 58 44.0	15.239
19	21 38 43.89	2.1548	19 28 39.9	11.213	19	23 19 42.09	2.0724	8 43 27.8	15.301
20	21 40 53.10	2.1521	19 17 23.9	11.319	20	23 21 46.42	2.0721	8 28 7.9	15.362
21	21 43 2.15	2.1494	19 6 1.6	11.425	21	23 23 50.74	2.0719	8 12 44.3	15 422
22	21 45 11.03	2.1467	18 54 32.9	11.531	22	23 25 55.05	2.0718	7 57 17.2	15.480
23	21 47 19.75	2.1441	S. 18 42 57.9	11.635	23	23 27 59.36	2.0718	S. 7 41 46.7	15.537
		SATURDAY 26.					MONDAY 28.		
0	21 49 28.32	2.1415	S. 18 31 16.7	11.738	0	23 30 3.67	2.0719	S. 7 26 12.8	15.593
1	21 51 36.73	2.1388	18 19 29.3	11.841	1	23 32 7.99	2.0721	7 10 35.6	15.648
2	21 53 44.98	2.1362	18 7 35.8	11.942	2	23 34 12.32	2.0723	6 54 55.1	15.702
3	21 55 53.08	2.1337	17 55 36.2	12.043	3	23 36 16.67	2.0727	6 39 11.4	15.754
4	21 58 1.03	2.1312	17 43 30.6	12.143	4	23 38 21.04	2.0731	6 23 24.6	15.805
5	22 0 8.83	2.1287	17 31 19.0	12.243	5	23 40 25.44	2.0736	6 7 34.8	15.854
6	22 2 16.48	2.1263	17 19 1.5	12.342	6	23 42 29.87	2.0741	5 51 42.1	15.903
7	22 4 23.99	2.1239	17 6 38.1	12.438	7	23 44 34.33	2.0747	5 35 46.5	15.951
8	22 6 31.35	2.1215	16 54 8.9	12.534	8	23 46 38.84	2.0755	5 19 48.0	15.998
9	22 8 38.57	2.1192	16 41 34.0	12.629	9	23 48 43.39	2.0763	5 3 46.7	16.043
10	22 10 45.66	2.1170	16 28 53.4	12.724	10	23 50 47.99	2.0772	4 47 42.8	16.087
11	22 12 52.61	2.1148	16 16 7.1	12.817	11	23 52 52.65	2.0782	4 31 36.3	16.130
12	22 14 59.43	2.1126	16 3 15.3	12.910	12	23 54 57.38	2.0793	4 15 27.2	16.172
13	22 17 6.12	2.1104	15 50 17.9	13.002	13	23 57 2.17	2.0804	3 59 15.7	16.212
14	22 19 12.68	2.1083	15 37 15.0	13.093	14	23 59 7.03	2.0817	3 43 1.8	16.251
15	22 21 19.12	2.1062	15 24 6.7	13.183	15	0 1 11.97	2.0830	3 26 45.6	16.288
16	22 23 25.43	2.1042	15 10 53.0	13.272	16	0 3 16.99	2.0844	3 10 27.2	16.324
17	22 25 31.62	2.1022	14 57 34.0	13.360	17	0 5 22.10	2.0859	2 54 6.7	16.359
18	22 27 37.70	2.1003	14 44 9.8	13.447	18	0 7 27.30	2.0875	2 37 44.1	16.393
19	22 29 43.66	2.0984	14 30 40.4	13.533	19	0 9 32.60	2.0892	2 21 19.5	16.426
20	22 31 49.51	2.0967	14 17 5.8	13.619	20	0 11 38.01	2.0910	2 4 53.0	16.457
21	22 33 55.26	2.0950	14 3 26.1	13.703	21	0 13 43.52	2.0928	1 48 24.7	16.486
22	22 36 0.91	2.0932	13 49 41.4	13.786	22	0 15 49.15	2.0948	1 31 54.7	16.514
23	22 38 6.45	2.0915	13 35 51.8	13.869	23	0 17 54.90	2.0968	1 15 23.0	16.542
24	22 40 11.89	2.0899	S. 13 21 57.2	13.951	24	0 20 0.77	2.0989	S. 0 58 49.7	16.567

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 20 0.77	2.0989	S. 0 58 49.7	16.567
1	0 22 6.77	2.1012	0 42 15.0	16.590
2	0 24 12.91	2.1035	0 25 38.9	16.613
3	0 26 19.19	2.1059	S. 0 9 1.4	16.635
4	0 28 25.62	2.1084	N. 0 7 37.3	16.654
5	0 30 32.20	2.1110	0 24 17.1	16.672
6	0 32 38.94	2.1137	0 40 58.0	16.689
7	0 34 45.84	2.1164	0 57 39.8	16.704
8	0 36 52.91	2.1193	1 14 22.5	16.718
9	0 39 0.16	2.1223	1 31 6.0	16.731
10	0 41 7.59	2.1253	1 47 50.2	16.741
11	0 43 15.20	2.1284	2 4 34.9	16.749
12	0 45 23.00	2.1317	2 21 20.1	16.757
13	0 47 31.00	2.1350	2 38 5.8	16.764
14	0 49 39.20	2.1384	2 54 51.8	16.767
15	0 51 47.61	2.1419	3 11 37.9	16.769
16	0 53 56.23	2.1455	3 28 24.1	16.771
17	0 56 5.07	2.1493	3 45 10.4	16.771
18	0 58 14.14	2.1531	4 1 56.6	16.768
19	1 0 23.44	2.1569	4 18 42.6	16.764
20	1 2 32.97	2.1608	4 35 28.3	16.758
21	1 4 42.74	2.1649	4 52 13.6	16.751
22	1 6 52.76	2.1691	5 8 58.4	16.742
23	1 9 3.03	2.1733	N. 5 25 42.6	16.731

WEDNESDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	1 11 13.56	2.1777	N. 5 42 26.1	16.718
1	1 13 24.36	2.1821	5 59 8.8	16.704
2	1 15 35.42	2.1866	6 15 50.6	16.687
3	1 17 46.75	2.1912	6 32 31.3	16.669
4	1 19 58.36	2.1959	6 49 10.9	16.650
5	1 22 10.26	2.2007	7 5 49.3	16.628
6	1 24 22.44	2.2055	7 22 26.3	16.604
7	1 26 34.92	2.2105	7 39 1.8	16.579
8	1 28 47.70	2.2156	7 55 35.8	16.552
9	1 31 0.79	2.2207	8 12 8.1	16.522
10	1 33 14.19	2.2259	8 28 38.5	16.491
11	1 35 27.90	2.2312	8 45 7.0	16.458
12	1 37 41.93	2.2366	9 1 33.5	16.423
13	1 39 56.29	2.2421	9 17 57.8	16.386
14	1 42 10.98	2.2477	9 34 19.8	16.348
15	1 44 26.01	2.2533	9 50 39.5	16.307
16	1 46 41.38	2.2590	10 6 56.6	16.263
17	1 48 57.09	2.2648	10 23 11.1	16.218
18	1 51 13.15	2.2707	10 39 22.8	16.172
19	1 53 29.57	2.2767	10 55 31.7	16.123
20	1 55 46.35	2.2827	11 11 37.5	16.071
21	1 58 3.49	2.2888	11 27 40.2	16.017
22	2 0 21.00	2.2949	11 43 39.6	15.962
23	2 2 38.88	2.3012	11 59 35.7	15.906
24	2 4 57.14	2.3075	N.12 15 28.3	15.846

THURSDAY, DECEMBER 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	2 4 57.14	2.3075	N.12 15 28.3	15.846

PHASES OF THE MOON.

		d	h	m
○ Full Moon	Nov.	4	3	49.3
☾ Last Quarter		10	22	1.9
● New Moon		19	1	18.9
☽ First Quarter		26	22	27.8

		d	h
☾ Perigee	Nov.	4	3.9
☾ Apogee		17	17.1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	α Aquilæ	W.	62° 9′ 48″	3311	63° 33′ 47″	3259	64° 58′ 46″	3211	66° 24′ 42″	3166
	Mars	W.	29 41 35	2360	31 26 7	2342	33 11 5	2325	34 56 28	2308
	α Arietis	E.	42 49 19	2333	41 4 8	2328	39 18 50	2326	37 33 29	2326
	Aldebaran	E.	72 39 57	2227	70 52 10	2212	69 4 1	2198	67 15 30	2184
2	α Aquilæ	W.	73 46 45	2985	75 17 16	2958	76 48 22	2932	78 20 0	2909
	Mars	W.	43 49 22	2232	45 37 2	2218	47 25 2	2206	49 13 21	2194
	Fomalhaut	W.	41 10 23	2481	42 52 3	2441	44 34 40	2403	46 18 10	2370
	Aldebaran	E.	58 7 59	2124	56 17 37	2115	54 27 0	2106	52 36 10	2099
	Pollux	E.	101 51 46	2064	99 59 51	2052	98 7 37	2039	96 15 4	2029
3	Mars	W.	58 18 55	2147	60 8 42	2140	61 58 40	2134	63 48 47	2128
	Fomalhaut	W.	55 6 15	2246	56 53 34	2229	58 41 19	2212	60 29 28	2196
	α Pegasi	W.	38 27 17	3049	39 56 29	2959	41 27 33	2882	43 0 15	2813
	Aldebaran	E.	43 19 46	2080	41 28 16	2081	39 36 48	2084	37 45 24	2089
	Pollux	E.	86 48 27	1984	84 54 28	1977	83 0 18	1972	81 5 59	1966
4	Mars	W.	73 1 1	2114	74 51 39	2115	76 42 16	2115	78 32 52	2116
	Fomalhaut	W.	69 34 42	2153	71 24 21	2147	73 14 9	2144	75 4 1	2142
	α Pegasi	W.	51 2 56	2576	52 42 24	2545	54 22 35	2518	56 3 23	2494
	Jupiter	W.	23 20 12	1921	25 15 52	1921	27 11 32	1921	29 7 11	1923
	Pollux	E.	71 32 46	1953	69 37 57	1953	67 43 8	1953	65 48 20	1955
5	Mars	W.	87 44 51	2137	89 34 53	2143	91 24 46	2151	93 14 27	2159
	Fomalhaut	W.	84 13 28	2151	86 3 9	2157	87 52 42	2163	89 42 5	2170
	α Pegasi	W.	64 34 13	2422	66 17 16	2415	68 0 29	2410	69 43 49	2406
	Jupiter	W.	38 44 26	1942	40 39 32	1948	42 34 28	1955	44 29 13	1963
	Pollux	E.	56 15 20	1974	54 21 5	1981	52 27 0	1988	50 33 7	1996
	Regulus	E.	92 47 23	1986	90 53 26	1991	88 59 38	1998	87 6 1	2007
6	α Pegasi	W.	78 20 29	2422	80 3 32	2429	81 46 25	2438	83 29 5	2449
	Jupiter	W.	53 59 30	2012	55 52 45	2025	57 45 41	2037	59 38 18	2050
	α Arietis	W.	34 57 14	2946	36 44 33	2940	38 32 1	2938	40 19 32	2939
	Pollux	E.	41 7 9	2046	39 14 47	2059	37 22 44	2072	35 31 1	2085
	Regulus	E.	77 41 25	2057	75 49 19	2068	73 57 31	2081	72 6 3	2094
7	Jupiter	W.	68 56 2	2123	70 46 26	2139	72 36 26	2155	74 26 2	2172
	α Arietis	W.	49 15 56	2268	51 2 42	2279	52 49 13	2289	54 35 28	2302
	Regulus	E.	62 54 7	2170	61 4 54	2186	59 16 6	2203	57 27 43	2221
	Venus	E.	99 18 44	2518	97 37 56	2535	95 57 32	2553	94 17 32	2572
8	Jupiter	W.	83 27 33	2260	85 14 32	2277	87 1 5	2296	88 47 10	2314
	α Arietis	W.	63 21 52	2373	65 6 6	2389	66 49 57	2405	68 33 24	2422
	Aldebaran	W.	33 10 6	2433	34 52 54	2438	36 35 34	2446	38 18 3	2456
	Regulus	E.	48 32 32	2314	46 46 53	2333	45 1 42	2353	43 17 0	2374
	Venus	E.	86 3 58	2667	84 26 34	2687	82 49 36	2707	81 13 6	2727
	Saturn	E.	88 19 53	2322	86 34 26	2340	84 49 25	2359	83 4 51	2377
9	α Arietis	W.	77 4 41	2508	78 45 43	2526	80 26 20	2544	82 6 32	2562
	Aldebaran	W.	46 46 33	2519	48 27 20	2533	50 7 47	2548	51 47 53	2563
	Regulus	E.	34 41 0	2482	32 59 21	2504	31 18 13	2527	29 37 38	2551
	Venus	E.	73 17 16	2829	71 43 26	2850	70 10 3	2870	68 37 6	2891

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	α Aquilæ	W.	67° 51′ 32″	3124	69° 19′ 12″	3085	70° 47′ 40″	3049	72° 16′ 52″	3016
	Mars	W.	36 42 16	2291	38 28 28	2275	40 15 4	2260	42 2 2	2245
	α Arietis	E.	35 48 8	2330	34 2 52	2337	32 17 46	2348	30 32 57	2366
	Aldebaran	E.	65 26 38	2170	63 37 26	2158	61 47 55	2145	59 58 5	2135
2	α Aquilæ	W.	79 52 8	2888	81 24 42	2869	82 57 40	2853	84 30 59	2840
	Mars	W.	51 1 57	2183	52 50 50	2173	54 39 58	2164	56 29 20	2155
	Fomalhaut	W.	48 2 28	2340	49 47 29	2313	51 33 10	2289	53 19 26	2266
	Aldebaran	E.	50 45 9	2092	48 53 58	2067	47 2 39	2083	45 11 14	2081
	Pollux	E.	94 22 15	2019	92 29 10	2009	90 35 49	2000	88 42 14	1992
3	Mars	W.	65 39 3	2124	67 29 25	2120	69 19 53	2118	71 10 25	2115
	Fomalhaut	W.	62 17 59	2186	64 6 48	2175	65 55 53	2166	67 45 12	2159
	α Pegasi	W.	44 34 26	2753	46 9 56	2701	47 46 35	2654	49 24 17	2612
	Aldebaran	E.	35 54 8	2096	34 3 3	2107	32 12 15	2121	30 21 48	2140
	Pollux	E.	79 11 31	1962	77 16 57	1958	75 22 17	1956	73 27 33	1954
4	Mars	W.	80 23 26	2119	82 13 56	2122	84 4 21	2126	85 54 40	2132
	Fomalhaut	W.	76 53 56	2141	78 43 52	2141	80 33 48	2144	82 23 40	2147
	α Pegasi	W.	57 44 45	2474	59 26 35	2457	61 8 49	2443	62 51 23	2431
	Jupiter	W.	31 2 48	1925	32 58 21	1928	34 53 49	1932	36 49 11	1936
	Pollux	E.	63 53 34	1957	61 58 52	1960	60 4 15	1964	58 9 44	1968
5	Mars	W.	95 3 56	2169	96 53 11	2178	98 42 12	2188	100 30 57	2200
	Fomalhaut	W.	91 31 17	2180	93 20 15	2189	95 8 59	2200	96 57 26	2212
	α Pegasi	W.	71 27 12	2408	73 10 36	2408	74 53 59	2412	76 37 17	2416
	Jupiter	W.	46 23 45	1972	48 18 4	1981	50 12 9	1991	52 5 58	2001
	Pollux	E.	48 39 26	2005	46 45 59	2014	44 52 46	2024	42 59 49	2035
	Regulus	E.	85 12 37	2015	83 19 26	2025	81 26 30	2034	79 33 49	2045
6	α Pegasi	W.	85 11 30	2460	86 53 39	2473	88 35 30	2487	90 17 1	2502
	Jupiter	W.	61 30 34	2064	63 22 29	2077	65 14 3	2092	67 5 14	2107
	α Arietis	W.	42 7 2	2241	43 54 28	2246	45 41 47	2252	47 28 57	2260
	Pollux	E.	33 39 38	2099	31 48 37	2114	29 57 59	2129	28 7 44	2145
	Regulus	E.	70 14 55	2109	68 24 9	2123	66 33 45	2138	64 43 44	2154
7	Jupiter	W.	76 15 12	2189	78 3 56	2206	79 52 15	2224	81 40 7	2241
	α Arietis	W.	56 21 24	2315	58 7 1	2328	59 52 19	2343	61 37 16	2357
	Regulus	E.	55 39 47	2239	53 52 17	2258	52 5 15	2276	50 18 40	2294
	Venus	E.	92 37 58	2590	90 58 49	2609	89 20 6	2628	87 41 49	2647
8	Jupiter	W.	90 32 49	2333	92 18 0	2351	94 2 49	2370	95 47 3	2389
	α Arietis	W.	70 16 28	2438	71 59 8	2456	73 41 23	2473	75 23 14	2490
	Aldebaran	W.	40 0 18	2467	41 42 18	2479	43 24 1	2492	45 5 26	2504
	Regulus	E.	41 32 48	2394	39 49 5	2416	38 5 53	2437	36 23 11	2459
	Venus	E.	79 37 2	2747	78 1 25	2768	76 26 15	2788	74 51 32	2809
	Saturn	E.	81 20 43	2396	79 37 2	2415	77 53 48	2433	76 11 1	2452
9	α Arietis	W.	83 46 19	2580	85 25 42	2598	87 4 40	2615	88 43 14	2634
	Aldebaran	W.	53 27 39	2579	55 7 3	2594	56 46 6	2610	58 24 48	2626
	Regulus	E.	27 57 36	2577	26 18 9	2603	24 39 18	2632	23 1 6	2663
	Venus	E.	67 4 35	2911	65 32 30	2931	64 0 50	2951	62 29 36	2970

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Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
9	SATURN	E.	74 28 40	2471	72 46 46	2489	71 5 18	2509	69 24 17	2527
	SUN	E.	113 34 0	2768	111 58 50	2788	110 24 6	2808	108 49 49	2828
10	α Arietis	W.	90 21 23	2652	91 59 8	2669	93 36 30	2687	95 13 28	2704
	Aldebaran	W.	60 3 8	2641	61 41 7	2657	63 18 44	2673	64 56 0	2689
	VENUS	E.	60 58 46	2990	59 28 21	3009	57 58 20	3028	56 28 42	3047
	SATURN	E.	61 5 32	2618	59 27 1	2636	57 48 55	2653	56 11 12	2671
	Spica	E.	75 8 49	2592	73 29 43	2610	71 51 2	2628	70 12 45	2645
	SUN	E.	101 4 48	2926	99 33 2	2946	98 1 41	2964	96 30 43	2983
11	Aldebaran	W.	72 57 9	2766	74 32 22	2780	76 7 16	2795	77 41 51	2808
	Pollux	W.	28 43 9	2725	30 19 16	2739	31 55 4	2754	33 30 32	2768
	SATURN	E.	48 8 18	2753	46 32 48	2768	44 57 38	2784	43 22 49	2798
	VENUS	E.	49 6 17	3138	47 38 53	3155	46 11 50	3172	44 45 7	3188
	Spica	E.	62 7 2	2729	60 31 0	2744	58 55 18	2760	57 19 57	2774
	SUN	E.	89 1 36	3072	87 32 52	3088	86 4 28	3105	84 36 24	3122
12	Aldebaran	W.	85 30 16	2876	87 3 6	2889	88 35 39	2901	90 7 57	2912
	Pollux	W.	41 23 19	2836	42 57 0	2848	44 30 25	2860	46 3 35	2873
	SATURN	E.	35 33 24	2868	34 0 24	2880	32 27 40	2893	30 55 12	2905
	Spica	E.	49 28 0	2846	47 54 32	2859	46 21 21	2873	44 48 27	2886
	SUN	E.	77 20 50	3197	75 54 37	3210	74 28 40	3224	73 2 59	3237
13	Pollux	W.	53 45 45	2926	55 17 31	2935	56 49 5	2945	58 20 27	2954
	Regulus	W.	17 44 57	3060	19 13 56	3051	20 43 6	3045	22 12 23	3042
	Spica	E.	37 7 56	2946	35 36 36	2958	34 5 30	2969	32 34 38	2981
	SUN	E.	65 58 17	3296	64 34 1	3307	63 9 58	3318	61 46 7	3328
14	Pollux	W.	65 54 36	2993	67 24 57	3000	68 55 10	3006	70 25 15	3013
	Regulus	W.	29 39 15	3043	31 8 34	3047	32 37 49	3049	34 7 1	3052
	SUN	E.	54 49 36	3372	53 26 47	3379	52 4 7	3386	50 41 35	3393
15	Pollux	W.	77 53 52	3039	79 23 17	3043	80 52 37	3047	82 21 52	3051
	Regulus	W.	41 32 6	3066	43 0 57	3069	44 29 44	3072	45 58 28	3073
	SUN	E.	43 50 45	3423	42 28 54	3428	41 7 9	3432	39 45 29	3438
16	Pollux	W.	89 47 4	3065	91 15 57	3067	92 44 47	3069	94 13 35	3070
	Regulus	W.	53 21 30	3083	54 50 0	3085	56 18 28	3086	57 46 55	3087
	SUN	E.	32 58 19	3454	31 37 4	3458	30 15 53	3461	28 54 45	3463
17	Regulus	W.	65 8 56	3089	66 37 19	3089	68 5 42	3089	69 34 5	3088
	SATURN	W.	24 12 38	3109	25 40 37	3110	27 8 35	3110	28 36 33	3110
	SUN	E.	22 9 43	3474	20 48 50	3477	19 28 0	3480	18 7 13	3483
20	SUN	W.	10 36 42	3471	11 57 39	3456	13 18 52	3445	14 40 18	3435
	α Aquilæ	E.	58 35 5	4316	57 28 27	4356	56 22 26	4400	55 17 5	4447
	Fomalhaut	E.	82 52 37	3215	81 26 46	3213	80 0 52	3211	78 34 56	3209
	MARS	E.	87 25 56	3263	86 1 1	3259	84 36 2	3255	83 10 58	3252
21	SUN	W.	21 30 0	3395	22 52 22	3388	24 14 52	3382	25 37 29	3375
	α Aquilæ	E.	50 2 6	4757	49 1 54	4836	48 2 47	4922	47 4 50	5018
	Fomalhaut	E.	71 24 46	3903	69 58 40	3901	68 32 32	3901	67 6 24	3900

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9	SATURN	E.	67° 43′ 41″	2545	66° 3′ 31″	2564	64° 23′ 46″	2583	62° 44′ 27″	2600
	SUN	E.	107 15 58	2848	105 42 33	2868	104 9 33	2887	102 36 58	2907
10	α Arietis	W.	96 50 2	2722	98 26 13	2738	100 2 2	2756	101 37 27	2772
	Aldebaran	W.	66 32 55	2704	68 9 29	2719	69 45 43	2735	71 21 36	2750
	VENUS	E.	54 59 28	3066	53 30 37	3084	52 2 8	3103	50 34 2	3120
	SATURN	E.	54 33 53	2687	52 56 56	2704	51 20 22	2720	49 44 9	2737
	Spica	E.	68 34 51	2662	66 57 20	2679	65 20 12	2695	63 43 26	2712
	SUN	E.	95 0 9	3001	93 29 58	3019	92 0 9	3037	90 30 42	3054
11	Aldebaran	W.	79 16 8	2823	80 50 6	2836	82 23 47	2850	83 57 10	2863
	Pollux	W.	35 5 42	2782	36 40 33	2796	38 15 6	2810	39 49 21	2823
	SATURN	E.	41 48 19	2813	40 14 8	2828	38 40 16	2841	37 6 41	2855
	VENUS	E.	43 18 44	3204	41 52 40	3220	40 26 54	3236	39 1 27	3250
	Spica	E.	55 44 55	2789	54 10 13	2804	52 35 50	2818	51 1 46	2832
	SUN	E.	83 8 40	3137	81 41 15	3153	80 14 9	3168	78 47 21	3182
12	Aldebaran	W.	91 40 0	2924	93 11 48	2936	94 43 21	2947	96 14 40	2958
	Pollux	W.	47 36 29	2883	49 9 9	2895	50 41 34	2905	52 13 46	2916
	SATURN	E.	29 23 0	2916	27 51 2	2928	26 19 19	2939	24 47 50	2950
	Spica	E.	43 15 49	2898	41 43 28	2910	40 11 22	2922	38 39 31	2935
	SUN	E.	71 37 34	3250	70 12 24	3262	68 47 28	3274	67 22 46	3285
13	Pollux	W.	59 51 37	2962	61 22 37	2971	62 53 26	2978	64 24 6	2986
	Regulus	W.	23 41 44	3040	25 11 7	3039	26 40 31	3040	28 9 54	3042
	Spica	E.	31 4 1	2992	29 33 38	3003	28 3 29	3014	26 33 34	3026
	SUN	E.	60 22 28	3338	58 59 0	3346	57 35 42	3355	56 12 34	3364
14	Pollux	W.	71 55 12	3018	73 25 2	3024	74 54 45	3029	76 24 22	3034
	Regulus	W.	35 36 9	3055	37 5 14	3058	38 34 15	3061	40 3 12	3064
	SUN	E.	49 19 11	3400	47 56 54	3407	46 34 45	3412	45 12 42	3417
15	Pollux	W.	83 51 2	3054	85 20 8	3057	86 49 10	3060	88 18 9	3063
	Regulus	W.	47 27 10	3076	48 55 49	3078	50 24 25	3080	51 52 59	3082
	SUN	E.	38 23 55	3441	37 2 25	3445	35 40 59	3448	34 19 37	3452
16	Pollux	W.	95 42 21	3071	97 11 6	3073	98 39 49	3073	100 8 31	3074
	Regulus	W.	59 15 21	3087	60 43 46	3088	62 12 10	3089	63 40 33	3089
	SUN	E.	27 33 39	3465	26 12 36	3468	24 51 36	3470	23 30 38	3472
17	Regulus	W.	71 2 29	3087	72 30 54	3087	73 59 19	3087	75 27 45	3085
	SATURN	W.	30 4 31	3109	31 32 30	3109	33 0 29	3108	34 28 29	3106
	SUN	E.	16 46 30	3487	15 25 51	3492	14 5 18	3497	12 44 51	3503
20	SUN	W.	16 1 55	3425	17 23 43	3417	18 45 40	3409	20 7 46	3402
	α Aquilæ	E.	54 12 26	4499	53 8 33	4556	52 5 30	4616	51 3 19	4684
	Fomalhaut	E.	77 8 58	3208	75 42 58	3205	74 16 55	3204	72 50 51	3204
	MARS	E.	81 45 50	3247	80 20 37	3243	78 55 19	3239	77 29 56	3234
21	SUN	W.	27 0 14	3368	28 23 7	3362	29 46 7	3355	31 9 15	3347
	α Aquilæ	E.	46 8 9	5122	45 12 48	5237	44 18 54	5362	43 26 32	5503
	Fomalhaut	E.	65 40 15	3200	64 14 6	3200	62 47 57	3200	61 21 48	3202

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21	Mars	E.	76° 4′ 27″	3230	74° 38′ 53″	3225	73° 13′ 13″	3220	71° 47′ 28″	3214
	α Pegasi	E.	92 13 4	3365	90 50 7	3359	89 27 4	3354	88 3 55	3350
22	Sun	W.	32 32 32	3340	33 55 57	3333	35 19 30	3325	36 43 12	3319
	Fomalhaut	E.	59 55 41	3203	58 29 35	3205	57 3 32	3208	55 37 32	3210
	Mars	E.	64 37 3	3186	63 10 37	3180	61 44 4	3173	60 17 23	3166
	α Pegasi	E.	81 7 0	3332	79 43 25	3329	78 19 47	3327	76 56 7	3325
23	Sun	W.	43 43 58	3276	45 8 37	3268	46 33 26	3259	47 58 25	3249
	Fomalhaut	E.	48 28 43	3239	47 3 20	3249	45 38 9	3259	44 13 10	3273
	Mars	E.	53 1 51	3130	51 34 18	3123	50 6 36	3114	48 38 44	3105
	α Pegasi	E.	69 57 19	3321	68 33 32	3323	67 9 47	3324	65 46 3	3326
	Jupiter	E.	90 4 35	2881	88 31 52	2873	86 58 59	2866	85 25 56	2857
24	Sun	W.	55 6 17	3198	56 32 29	3188	57 58 53	3176	59 25 31	3165
	Mars	E.	41 16 45	3061	39 47 48	3052	38 18 40	3043	36 49 20	3033
	α Pegasi	E.	58 48 23	3351	57 25 11	3359	56 2 8	3370	54 39 17	3381
	Jupiter	E.	77 37 52	2811	76 3 39	2801	74 29 13	2792	72 54 34	2781
	α Arietis	E.	99 14 19	2898	97 41 57	2887	96 9 22	2876	94 36 33	2866
25	Sun	W.	66 42 14	3103	68 10 20	3089	69 38 43	3076	71 7 22	3063
	Jupiter	E.	64 57 47	2725	63 21 41	2713	61 45 19	2701	60 8 40	2689
	α Arietis	E.	86 48 54	2809	85 14 38	2797	83 40 6	2785	82 5 19	2772
26	Sun	W.	78 34 56	2989	80 5 22	2974	81 36 7	2959	83 7 11	2943
	Jupiter	E.	52 1 9	2622	50 22 44	2609	48 44 1	2594	47 4 58	2580
	α Arietis	E.	74 7 17	2710	72 30 51	2697	70 54 7	2684	69 17 6	2672
	Aldebaran	E.	104 22 57	2684	102 45 55	2669	101 8 33	2654	99 30 51	2638
27	Sun	W.	90 47 35	2862	92 20 43	2845	93 54 12	2828	95 28 3	2811
	α Aquilæ	W.	48 35 40	4305	49 42 28	4200	50 50 54	4103	52 0 53	4012
	Jupiter	E.	38 44 41	2505	37 3 35	2490	35 22 8	2475	33 40 19	2459
	α Arietis	E.	61 7 42	2607	59 28 57	2596	57 49 56	2583	56 10 38	2571
	Aldebaran	E.	91 17 11	2562	89 37 24	2546	87 57 15	2530	86 16 44	2515
28	Sun	W.	103 22 56	2725	104 59 3	2707	106 35 33	2690	108 12 26	2673
	α Aquilæ	W.	58 11 31	3642	59 29 20	3582	60 48 14	3525	62 8 11	3471
	α Arietis	E.	47 50 9	2517	46 9 20	2510	44 28 20	2502	42 47 9	2496
	Aldebaran	E.	77 48 43	2436	76 6 0	2422	74 22 56	2406	72 39 30	2391
29	Sun	W.	116 22 36	2589	118 1 46	2572	119 41 19	2556	121 21 14	2540
	α Aquilæ	W.	69 1 53	3247	70 27 7	3209	71 53 5	3175	73 19 44	3142
	Fomalhaut	W.	35 57 18	2806	37 31 38	2749	39 7 13	2697	40 43 57	2649
	Mars	W.	22 22 18	2499	24 3 32	2478	25 45 16	2458	27 27 28	2438
	Aldebaran	E.	63 56 55	2317	62 11 21	2304	60 25 28	2291	58 39 15	2279
	Pollux	E.	107 44 36	2264	105 57 44	2249	104 10 30	2234	102 22 53	2218
30	α Aquilæ	W.	80 42 7	3009	82 12 9	2988	83 42 37	2969	85 13 28	2952
	Fomalhaut	W.	49 2 13	2462	50 44 19	2433	52 27 7	2406	54 10 33	2381
	Mars	W.	36 5 2	2353	37 49 44	2337	39 34 49	2323	41 20 15	2309
	Aldebaran	E.	49 43 47	2224	47 55 55	2215	46 7 50	2208	44 19 34	2201
	Pollux	E.	93 19 16	2147	91 29 29	2135	89 39 23	2122	87 48 57	2110

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21	Mars	E.	70° 21′ 36″	3209	68° 55′ 38″	3204	67° 29′ 33″	3198	66° 3′ 21″	3193
	α Pegasi	E.	86 40 41	3345	85 17 22	3342	83 53 59	3338	82 30 31	3335
22	Sun	W.	38 7 2	3310	39 31 2	3302	40 55 11	3294	42 19 30	3286
	Fomalhaut	E.	54 11 35	3214	52 45 43	3219	51 19 56	3225	49 54 16	3231
	Mars	E.	58 50 33	3159	57 23 35	3153	55 56 29	3145	54 29 14	3138
	α Pegasi	E.	75 32 24	3323	74 8 39	3322	72 44 53	3321	71 21 6	3321
23	Sun	W.	49 23 36	3240	50 48 58	3230	52 14 32	3220	53 40 18	3209
	Fomalhaut	E.	42 48 27	3288	41 24 2	3306	39 59 57	3326	38 36 16	3350
	Mars	E.	47 10 41	3097	45 42 28	3089	44 14 5	3080	42 45 31	3070
	α Pegasi	E.	64 22 22	3329	62 58 44	3333	61 35 11	3338	60 11 43	3345
	Jupiter	E.	83 52 42	2848	82 19 17	2840	80 45 41	2831	79 11 53	2821
24	Sun	W.	60 52 22	3153	62 19 28	3141	63 46 48	3129	65 14 23	3115
	Mars	E.	35 19 48	3023	33 50 4	3014	32 20 8	3004	30 50 0	2993
	α Pegasi	E.	53 16 39	3395	51 54 17	3411	50 32 13	3430	49 10 30	3451
	Jupiter	E.	71 19 41	2770	69 44 34	2760	68 9 13	2748	66 33 37	2738
	α Arietis	E.	93 3 30	2855	91 30 13	2843	89 56 41	2832	88 22 55	2821
25	Sun	W.	72 36 17	3048	74 5 30	3034	75 35 0	3019	77 4 49	3005
	Jupiter	E.	58 31 45	2676	56 54 33	2663	55 17 3	2649	53 39 15	2636
	α Arietis	E.	80 30 15	2760	78 54 55	2748	77 19 19	2735	75 43 26	2723
26	Sun	W.	84 38 35	2927	86 10 19	2912	87 42 23	2895	89 14 48	2878
	Jupiter	E.	45 25 35	2565	43 45 52	2551	42 5 49	2535	40 25 25	2521
	α Arietis	E.	67 39 48	2659	66 2 13	2646	64 24 20	2633	62 46 10	2620
	Aldebaran	E.	97 52 48	2624	96 14 25	2608	94 35 41	2593	92 56 37	2577
27	Sun	W.	97 2 17	2794	98 36 53	2777	100 11 51	2760	101 47 12	2742
	α Aquilæ	W.	53 12 21	3927	54 25 13	3850	55 39 24	3776	56 54 51	3707
	Jupiter	E.	31 58 8	2443	30 15 35	2427	28 32 39	2412	26 49 21	2396
	α Arietis	E.	54 31 3	2559	52 51 12	2548	51 11 6	2538	49 30 45	2527
	Aldebaran	E.	84 35 52	2499	82 54 38	2484	81 13 2	2468	79 31 4	2452
28	Sun	W.	109 49 42	2657	111 27 21	2639	113 5 23	2622	114 43 48	2605
	α Aquilæ	W.	63 29 7	3421	64 51 0	3373	66 13 47	3329	67 37 25	3286
	α Arietis	E.	41 5 50	2491	39 24 24	2487	37 42 53	2486	36 1 20	2487
	Aldebaran	E.	70 55 42	2375	69 11 32	2361	67 27 1	2346	65 42 8	2332
29	Sun	W.	123 1 32	2525	124 42 11	2510	126 23 11	2494	128 4 32	2480
	α Aquilæ	W.	74 47 3	3111	76 14 59	3082	77 43 30	3056	79 12 33	3031
	Fomalhaut	W.	42 21 46	2605	44 0 34	2565	45 40 17	2528	47 20 51	2494
	Mars	W.	29 10 8	2420	30 53 14	2402	32 36 46	2385	34 20 42	2368
	Aldebaran	E.	56 52 44	2266	55 5 55	2254	53 18 48	2243	51 31 25	2233
	Pollux	E.	100 34 53	2204	98 46 31	2189	96 57 47	2175	95 8 42	2161
30	α Aquilæ	W.	86 44 41	2938	88 16 12	2924	89 48 0	2913	91 20 2	2904
	Fomalhaut	W.	55 54 35	2357	57 39 11	2335	59 24 19	2315	61 9 56	2296
	Mars	W.	43 6 1	2296	44 52 6	2283	46 38 30	2271	48 25 12	2260
	Aldebaran	E.	42 31 8	2196	40 42 34	2193	38 53 56	2191	37 5 15	2192
	Pollux	E.	85 58 13	2098	84 7 10	2086	82 15 50	2075	80 24 13	2066

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from / Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Thur.	1	16 32 37.46	10.815	S. 21 56 9.8	-22.49	16 16.07	70.36	10 33.79	0.957
Frid.	2	16 36 57.35	10.842	22 4 57.8	21.43	16 16.22	70.44	10 10.53	0.983
Sat.	3	16 41 17.84	10.866	22 13 20.2	20.36	16 16.36	70.52	9 46.67	1.007
SUN.	4	16 45 38.90	10.890	22 21 16.7	-19.28	16 16.50	70.60	9 22.24	1.031
Mon.	5	16 50 0.51	10.912	22 28 47.3	18.19	16 16.63	70.68	8 57.25	1.053
Tues.	6	16 54 22.67	10.934	22 35 51.7	17.10	16 16.75	70.75	8 31.71	1.075
Wed.	7	16 58 45.34	10.954	22 42 29.6	-16.00	16 16.87	70.81	8 5.67	1.095
Thur.	8	17 3 8.50	10.974	22 48 40.6	14.89	16 16.99	70.87	7 39.14	1.115
Frid.	9	17 7 32.12	10.993	22 54 24.8	13.76	16 17.10	70.93	7 12.16	1.134
Sat.	10	17 11 56.18	11.010	22 59 41.9	-12.63	16 17.20	70.99	6 44.73	1.151
SUN.	11	17 16 20.65	11.026	23 4 31.7	11.49	16 17.30	71.04	6 16.90	1.167
Mon.	12	17 20 45.50	11.042	23 8 54.1	10.34	16 17.40	71.08	5 48.69	1.183
Tues.	13	17 25 10.69	11.056	23 12 48.9	- 9.19	16 17.49	71.12	5 20.13	1.197
Wed.	14	17 29 36.21	11.069	23 16 15.9	8.03	16 17.58	71.16	4 51.24	1.210
Thur.	15	17 34 2.01	11.079	23 19 15.0	6.87	16 17.66	71.19	4 22.08	1.220
Frid.	16	17 38 28.05	11.089	23 21 46.2	- 5.70	16 17.74	71.22	3 52.68	1.230
Sat.	17	17 42 54.30	11.097	23 23 49.3	4.54	16 17.81	71.25	3 23.07	1.237
SUN.	18	17 47 20.72	11.104	23 25 24.1	3.36	16 17.88	71.27	2 53.29	1.244
Mon.	19	17 51 47.27	11.109	23 26 30.6	- 2.18	16 17.95	71.28	2 23.38	1.249
Tues.	20	17 56 13.91	11.112	23 27 8.7	- 1.00	16 18.01	71.28	1 53.38	1.252
Wed.	21	18 0 40.60	11.113	23 27 18.6	+ 0.18	16 18.07	71.29	1 23.33	1.253
Thur.	22	18 5 7.32	11.113	23 27 0.1	+ 1.36	16 18.12	71.29	0 53.26	1.253
Frid.	23	18 9 34.00	11.111	23 26 13.3	2.54	16 18.17	71.29	0 23.21	1.251
Sat.	24	18 14 0.62	11.108	23 24 58.1	3.72	16 18.22	71.28	0 6.77	1.248
SUN.	25	18 18 27.14	11.103	23 23 14.6	+ 4.90	16 18.26	71.27	0 36.65	1.243
Mon.	26	18 22 53.53	11.097	23 21 2.9	6.07	16 18.30	71.25	1 6.40	1.237
Tues.	27	18 27 19.76	11.089	23 18 23.0	7.24	16 18.33	71.23	1 35.98	1.229
Wed.	28	18 31 45.78	11.080	23 15 15.1	+ 8.41	16 18.36	71.20	2 5.36	1.220
Thur.	29	18 36 11.57	11.070	23 11 39.2	9.57	16 18.38	71.17	2 34.51	1.210
Frid.	30	18 40 37.09	11.058	23 7 35.5	10.73	16 18.39	71.14	3 3.40	1.198
Sat.	31	18 45 2.32	11.045	23 3 4.1	11.88	16 18.40	71.10	3 31.99	1.185
SUN.	32	18 49 27.22	11.031	S. 22 58 5.0	+13.03	16 18.41	71.06	4 0.26	1.171

Note.—The mean time of semidiameter passing may be found by subtracting 0s.19 from the sidereal time.
The sign − prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	Equation of Time, to be Added to / Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Thur.	1	16 32 39.37	10.813	S. 21 56 13.7	−22.50	10 33.62	0.957	16 43 12.99
Frid.	2	16 36 59.19	10.839	22 5 1.4	21.44	10 10.36	0.983	16 47 9.55
Sat.	3	16 41 19.61	10.863	22 13 23.5	20.37	9 46.50	1.007	16 51 6.11
SUN.	4	16 45 40.60	10.887	22 21 19.7	−19.29	9 22.07	1.031	16 55 2.67
Mon.	5	16 50 2.14	10.909	22 28 50.0	18.20	8 57.09	1.053	16 58 59.23
Tues.	6	16 54 24.22	10.931	22 35 54.1	17.11	8 31.56	1.075	17 2 55.78
Wed.	7	16 58 46.82	10.951	22 42 31.7	−16.01	8 5.52	1.095	17 6 52.34
Thur.	8	17 3 9.90	10.971	22 48 42.5	14.90	7 39.00	1.115	17 10 48.90
Frid.	9	17 7 33.44	10.990	22 54 26.4	13.77	7 12.02	1.134	17 14 45.46
Sat.	10	17 11 57.42	11.007	22 59 43.3	−12.64	6 44.60	1.151	17 18 42.02
SUN.	11	17 16 21.81	11.023	23 4 32.9	11.50	6 16.77	1.167	17 22 38.58
Mon.	12	17 20 46.57	11.039	23 8 55.1	10.35	5 48.57	1.183	17 26 35.14
Tues.	13	17 25 11.68	11.053	23 12 49.7	− 9.20	5 20.02	1.197	17 30 31.70
Wed.	14	17 29 37.11	11.065	23 16 16.5	8.04	4 51.14	1.210	17 34 28.25
Thur.	15	17 34 2.82	11.076	23 19 15.5	6.88	4 21.99	1.221	17 38 24.81
Frid.	16	17 38 28.77	11.086	23 21 46.5	− 5.71	3 52.60	1.230	17 42 21.37
Sat.	17	17 42 54.93	11.094	23 23 49.4	4.54	3 23.00	1.237	17 46 17.93
SUN.	18	17 47 21.26	11.100	23 25 24.1	3.36	2 53.23	1.244	17 50 14.49
Mon.	19	17 51 47.72	11.105	23 26 30.5	− 2.18	2 23.33	1.249	17 54 11.05
Tues.	20	17 56 14.27	11.108	23 27 8.7	− 1.00	1 53.34	1.252	17 58 7.61
Wed.	21	18 0 40.87	11.109	23 27 18.6	+ 0.18	1 23.30	1.253	18 2 4.17
Thur.	22	18 5 7.49	11.109	23 27 0.1	+ 1.36	0 53.23	1.253	18 6 0.72
Frid.	23	18 9 34.08	11.107	23 26 13.3	2.54	0 23.20	1.251	18 9 57.28
Sat	24	18 14 0.61	11.104	23 24 58.1	3.72	0 6.77	1.248	18 13 53.84
SUN.	25	18 18 27.04	11.099	23 23 14.6	+ 4.90	0 36.64	1.243	18 17 50.40
Mon.	26	18 22 53.34	11.093	23 21 2.9	6.07	1 6.38	1.237	18 21 46.96
Tues.	27	18 27·19 47	11.085	23 18 23.2	7.24	1 35.95	1.229	18 25 43.52
Wed.	28	18 31 45.40	11.076	23 15 15.4	+ 8.41	2 5.32	1.220	18 29 40.08
Thur.	29	18 36 11.10	11.066	23 11 39.6	9.57	2 34.46	1.210	18 33 36.64
Frid.	30	18 40 36.53	11.054	23 7 36.0	10.73	3 3.34	1.198	18 37 33.19
Sat.	31	18 45 1.67	11.041	23 3 4.7	11.88	3 31.92	1.185	18 41 29.75
SUN.	32	18 49 26.49	11.027	S. 22 58 5.8	+13.02	4 0.18	1.171	18 45 26.31

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.

Diff. for 1 hour,
$+9^{s}.8565$.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
		° ′ ″	′ ″	″	″			h m s
1	336	249 49 22.2	48 46.9	152.13	+ 0.12	9.9936934	-28.1	7 15 35.45
2	337	250 50 13.8	49 38.3	152.17	0.25	9.9936271	27.1	7 11 39.54
3	338	251 51 6.3	50 30.7	152.21	0.37	9.9935634	26.1	7 7 43.63
4	339	252 51 59.8	51 24.0	152.25	+ 0.47	9.9935023	-25.0	7 3 47.72
5	340	253 52 54.3	52 18.3	152.30	0.55	9.9934437	24.0	6 59 51.80
6	341	254 53 49.9	53 13.7	152.34	0.61	9.9933876	22.9	6 55 55.89
7	342	255 54 46.6	54 10.2	152.39	+ 0.64	9.9933341	-21.8	6 51 59.98
8	343	256 55 44.3	55 7.8	152.44	0.65	9.9932831	20.7	6 48 4.07
9	344	257 56 43.1	56 6.4	152.49	0.62	9.9932346	19.7	6 44 8.15
10	345	258 57 43.1	57 6.2	152.53	+ 0.56	9.9931685	-18.7	6 40 12.24
11	346	259 58 44.2	58 7.1	152.57	0.48	9.9931446	17.8	6 36 16.33
12	347	260 59 46.4	59 9.1	152.61	0.37	9.9931028	17.0	6 32 20.42
13	348	262 0 49.5	0 12.0	152.65	+ 0.24	9.9930630	-16.2	6 28 24.50
14	349	263 1 53.5	1 15.8	152.69	+ 0.11	9.9930251	15.4	6 24 28.59
15	350	264 2 58.5	2 20.6	152.73	− 0.02	9.9929890	14.7	6 20 32.68
16	351	265 4 4.4	3 26.3	152.76	− 0.16	9.9929547	-14.0	6 16 36.77
17	352	266 5 11.1	4 32.8	152.79	0.28	9.9929220	13.3	6 12 40.85
18	353	267 6 18.4	5 39.9	152.81	0.39	9.9928908	12.7	6 8 44.94
19	354	268 7 26.2	6 47.5	152.83	− 0.47	9.9928612	-12.0	6 4 49.03
20	355	269 8 34.5	7 55.6	152.85	0.52	9.9928333	11.3	6 0 53.11
21	356	270 9 43.2	9 4.1	152.87	0.55	9.9928070	10.6	5 56 57.19
22	357	271 10 52.1	10 12.8	152.88	− 0.55	9.9927824	- 9.9	5 53 1.28
23	358	272 12 1.2	11 21.7	152.88	0.51	9.9927595	9.1	5 49 5.37
24	359	273 13 10.4	12 30.7	152.88	0.44	9.9927385	8.3	5 45 9.46
25	360	274 14 19.6	13 39.7	152.88	− 0.35	9.9927194	- 7.5	5 41 13.54
26	361	275 15 28.7	14 48.6	152.88	0.25	9.9927025	6.6	5 37 17.63
27	362	276 16 37.8	15 57.5	152.88	0.13	9.9926878	5.6	5 33 21.72
28	363	277 17 46.8	17 6.3	152.88	− 0.01	9.9926756	- 4.6	5 29 25.81
29	364	278 18 55.7	18 15.0	152.87	+ 0.12	9.9926659	3.5	5 25 29.89
30	365	279 20 4.4	19 23.5	152.86	0.24	9.9926588	2.4	5 21 33.98
31	366	280 21 12.9	20 31.8	152.86	0.35	9.9926543	1.3	5 17 38.07
32	367	281 22 21.3	21 40.0	152.85	+ 0.45	9.9926526	- 0.1	5 13 42.16

Note.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January $1^d.0$.

Diff. for 1 Hour,
— $9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 35.3	16 38.9	60 46.4	+1.23	60 59.4	+0.90	9 42.9	2.29	12.0
2	16 41.2	16 42.3	61 8.0	+0.53	61 12.2	+0.15	10 40.2	2.48	13.0
3	16 42.2	16 40.7	61 11.5	−0.26	61 6.0	−0.65	11 42.2	2.65	14.0
4	16 37.9	16 33.9	60 55.8	−1.04	60 41.0	−1.40	12 47.3	2.72	15.0
5	16 28.8	16 22.7	60 22.3	1.70	60 0.1	1.96	13 52.7	2.66	16.0
6	16 15.9	16 8.6	59 35.2	2.16	59 8.2	2.31	14 55.0	2.49	17.0
7	16 0.9	15 53.0	58 39.8	−2.39	58 10.8	−2.42	15 52.1	2.25	18.0
8	15 45.1	15 37.3	57 41.8	2.39	57 13.4	2.33	16 43.6	2.02	19.0
9	15 29.9	15 22.8	56 46.0	2.23	56 20.0	2.09	17 30.1	1.85	20.0
10	15 16.2	15 10.2	55 55.9	−1.92	55 33.9	−1.74	18 12.9	1.73	21.0
11	15 4.8	15 0.1	55 14.1	1.55	54 56.7	1.35	18 53.5	1.66	22.0
12	14 56.0	14 52.6	54 41.7	1.15	54 29.2	0.94	19 33.2	1.64	23.0
13	14 49.8	14 47.7	54 19.1	−0.75	54 11.3	−0.55	20 13.0	1.68	24.0
14	14 46.3	14 45.4	54 5.9	0.36	54 2.7	−0.18	20 54.3	1.76	25.0
15	14 45.1	14 45.3	54 1.6	−0.02	54 2.3	+0.13	21 37.7	1.86	26.0
16	14 46.0	14 47.1	54 4.8	+0.28	54 8.9	+0.40	22 24.1	1.98	27.0
17	14 48.6	14 50.5	54 14.4	0.52	54 21.3	0.62	23 13.5	2.10	28.0
18	14 52.6	14 55.1	54 29.3	0.71	54 38.3	0.79	6		29.0
19	14 57.8	15 0.8	54 48.3	+0.87	54 59.2	+0.94	0 5.5	2.20	0.2
20	15 3.9	15 7.3	55 10.8	1.00	55 23.1	1.05	0 59.0	2.23	1.2
21	15 10.8	15 14.5	55 36.1	1.11	55 49.7	1.16	1 52.4	2.21	2.2
22	15 18.4	15 22.5	56 4.0	+1.22	56 19.0	+1.28	2 44.6	2.13	3.2
23	15 26.8	15 31.2	56 34.6	1.33	56 50.8	1.38	3 34.6	2.04	4.2
24	15 35.8	15 40.5	57 7.7	1.43	57 25.2	1.48	4 22.5	1.96	5.2
25	15 45.4	15 50.5	57 43.2	+1.52	58 1.6	+1.54	5 9.0	1.91	6.2
26	15 55.5	16 0.6	58 20.1	1.55	58 38.7	1.56	5 55.0	1.92	7.2
27	16 5.7	16 10.4	58 57.1	1.50	59 14.9	1.42	6 42.0	1.99	8.2
28	16 15.0	16 19.1	59 31.6	+1.34	59 47.0	+1.21	7 31.4	2.12	9.2
29	16 22.9	16 25.9	60 0.6	1.03	60 11.8	0.83	8 24.6	2.30	10.2
30	16 28.2	16 29.7	60 20.4	+0.58	60 25.8	+0.30	9 22.4	2.49	11.2
31	16 30.2	16 29.7	60 27.7	0.00	60 25.9	−0.31	10 24.7	2.64	12.2
32	16 28.1	16 25.7	60 20.3	−0.63	60 10.9	−0.93	11 29.2	2.69	13.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	2 4 57.14	2.3075	N.12 15 28.3	15.846
1	2 7 15.78	2.3139	12 31 17.2	15.783
2	2 9 34.81	2.3203	12 47 2.3	15.720
3	2 11 54.22	2.3267	13 2 43.6	15.654
4	2 14 14.02	2.3333	13 18 20.8	15.586
5	2 16 34.22	2.3401	13 33 53.9	15.516
6	2 18 54.83	2.3468	13 49 22.7	15.443
7	2 21 15.84	2.3535	14 4 47.0	15.368
8	2 23 37.25	2.3603	14 20 6.8	15.291
9	2 25 59.07	2.3672	14 35 21.9	15.212
10	2 28 21.31	2.3742	14 50 32.2	15.130
11	2 30 43.97	2.3811	15 5 37.5	15.046
12	2 33 7.04	2.3881	15 20 37.7	14.960
13	2 35 30.54	2.3952	15 35 32.7	14.872
14	2 37 54.46	2.4023	15 50 22.3	14.782
15	2 40 18.81	2.4094	16 5 6.5	14.689
16	2 42 43.59	2.4166	16 19 45.0	14.593
17	2 45 8.80	2.4238	16 34 17.7	14.496
18	2 47 34.45	2.4311	16 48 44.5	14.396
19	2 50 0 53	2.4384	17 3 5.2	14.294
20	2 52 27.05	2.4457	17 17 19.8	14.191
21	2 54 54.01	2.4530	17 31 28.1	14.084
22	2 57 21.41	2.4603	17 45 29.9	13.975
23	2 59 49.25	2.4677	N.17 59 25.1	13.864

FRIDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	3 2 17.53	2.4751	N.18 13 13.6	13.751
1	3 4 46.26	2.4825	18 26 55.2	13.635
2	3 7 15.43	2.4898	18 40 29.8	13.517
3	3 9 45.04	2.4972	18 53 57.2	13.397
4	3 12 15.10	2.5046	19 7 17.4	13.274
5	3 14 45.60	2.5120	19 20 30.1	13.149
6	3 17 16.54	2.5193	19 33 35.3	13.022
7	3 19 47.92	2.5267	19 46 32.8	12.892
8	3 22 19.75	2.5341	19 59 22.4	12.761
9	3 24 52.02	2.5415	20 12 4.1	12.627
10	3 27 24.73	2.5488	20 24 37.6	12.490
11	3 29 57.87	2.5560	20 37 2.9	12.352
12	3 32 31.45	2.5633	20 49 19.9	12.212
13	3 35 5.47	2.5706	21 1 28.4	12.069
14	3 37 39.92	2.5777	21 13 28.2	11.924
15	3 40 14.79	2.5848	21 25 19.3	11.777
16	3 42 50.09	2.5918	21 37 1.5	11.627
17	3 45 25.81	2.5989	21 48 34.6	11.476
18	3 48 1.96	2.6059	21 59 58.6	11.323
19	3 50 38.52	2.6128	22 11 13.3	11.167
20	3 53 15.49	2.6197	22 22 18.6	11.009
21	3 55 52.88	2.6265	22 33 14.4	10.849
22	3 58 30.67	2.6332	22 44 0.5	10.687
23	4 1 8.86	2.6398	22 54 36.9	10.524
24	4 3 47.44	2.6463	N.23 5 3.4	10.358

SATURDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	4 3 47.44	2.6463	N.23 5 3.4	10.358
1	4 6 26.41	2.6528	23 15 19.9	10.190
2	4 9 5.77	2.6591	23 25 26.2	10.020
3	4 11 45.50	2.6653	23 35 22.3	9.848
4	4 14 25.60	2.6714	23 45 8.0	9.675
5	4 17 6.07	2.6776	23 54 43.3	9.500
6	4 19 46.91	2.6836	24 4 8.0	9.322
7	4 22 28.10	2.6893	24 13 22.0	9.143
8	4 25 9.63	2.6949	24 22 25.2	8.964
9	4 27 51.49	2.7004	24 31 17.6	8.782
10	4 30 33.68	2.7058	24 39 59.0	8.597
11	4 33 16.19	2.7112	24 48 29.3	8.412
12	4 35 59.02	2.7163	24 56 48.4	8.224
13	4 38 42.15	2.7213	25 4 56.2	8.036
14	4 41 25.58	2.7262	25 12 52.7	7.846
15	4 44 9.29	2.7308	25 20 37.7	7.654
16	4 46 53.28	2.7354	25 28 11.1	7.461
17	4 49 37.54	2.7398	25 35 33.0	7.267
18	4 52 22.06	2.7441	25 42 43.2	7.072
19	4 55 6.83	2.7481	25 49 41.6	6.874
20	4 57 51.83	2.7519	25 56 28.1	6.676
21	5 0 37.06	2.7557	26 3 2.7	6.477
22	5 3 22.51	2.7592	26 9 25.3	6.277
23	5 6 8.16	2.7625	N.26 15 35.9	6.076

SUNDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	5 8 54.01	2.7657	N.26 21 34.4	5.873
1	5 11 40.04	2.7687	26 27 20.7	5.669
2	5 14 26.25	2.7715	26 32 54.7	5.464
3	5 17 12.62	2.7741	26 38 16.4	5.259
4	5 19 59.14	2.7764	26 43 25.8	5.054
5	5 22 45.79	2.7785	26 48 22.9	4.848
6	5 25 32.56	2.7805	26 53 7.6	4.641
7	5 28 19.45	2.7823	26 57 39.8	4.433
8	5 31 6.44	2.7838	27 1 59.5	4.224
9	5 33 53.51	2.7852	27 6 6.7	4.015
10	5 36 40.66	2.7863	27 10 1.3	3.805
11	5 39 27.87	2.7872	27 13 43.3	3.596
12	5 42 15.13	2.7880	27 17 12.8	3.386
13	5 45 2.43	2.7885	27 20 29.6	3.175
14	5 47 49.75	2.7887	27 23 33.8	2.965
15	5 50 37.08	2.7888	27 26 25.4	2.754
16	5 53 24.41	2.7867	27 29 4.3	2.543
17	5 56 11.72	2.7883	27 31 30.5	2.332
18	5 58 59.00	2.7877	27 33 44.1	2.121
19	6 1 46.24	2.7868	27 35 45.0	1.910
20	6 4 33.42	2.7857	27 37 33.3	1.700
21	6 7 20.53	2.7845	27 39 9.0	1.489
22	6 10 7.56	2.7830	27 40 32.0	1.279
23	6 12 54.49	2.7813	27 41 42.5	1.070
24	6 15 41.32	2.7794	N.27 42 40.4	0.860

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	6 15 41.32	2.7794	N.27 42 40.4	0.860
1	6 18 28.02	2.7772	27 43 25.7	0.651
2	6 21 14.59	2.7749	27 43 58.5	0.442
3	6 24 1.01	2.7723	27 44 18.8	0.234
4	6 26 47.27	2.7696	27 44 26.6	+ 0.027
5	6 29 33.36	2.7666	27 44 22.0	− 0.180
6	6 32 19.26	2.7634	27 44 5.0	0.386
7	6 35 4.97	2.7600	27 43 35.7	0.591
8	6 37 50.46	2.7563	27 42 54.1	0.796
9	6 40 35.73	2.7525	27 42 0.2	1.000
10	6 43 20.76	2.7485	27 40 54.1	1.202
11	6 46 5.55	2.7443	27 39 35.9	1.404
12	6 48 50.08	2.7399	27 38 5.6	1.605
13	6 51 34.34	2.7353	27 36 23.3	1.805
14	6 54 18.32	2.7305	27 34 29.0	2.003
15	6 57 2.00	2.7255	27 32 22.9	2.200
16	6 59 45.38	2.7203	27 30 5.0	2.397
17	7 2 28.44	2.7150	27 27 35.3	2.593
18	7 5 11.18	2.7095	27 24 53.8	2.787
19	7 7 53.58	2.7038	27 22 0.8	2.979
20	7 10 35.64	2.6980	27 18 56.3	3.170
21	7 13 17.34	2.6919	27 15 40.4	3.360
22	7 15 58.67	2.6857	27 12 13.1	3.548
23	7 18 39.63	2.6795	N.27 8 34.6	3.735

TUESDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	7 21 20.21	2.6730	N.27 4 44.9	3.921
1	7 24 0.39	2.6663	27 0 44.1	4.105
2	7 26 40.17	2.6596	26 56 32.3	4.287
3	7 29 19.54	2.6528	26 52 9.6	4.468
4	7 31 58.50	2.6457	26 47 36.1	4.647
5	7 34 37.02	2.6384	26 42 51.9	4.825
6	7 37 15.10	2.6310	26 37 57.1	5.001
7	7 39 52.74	2.6236	26 32 51.8	5.175
8	7 42 29.94	2.6162	26 27 36.1	5.348
9	7 45 6.68	2.6085	26 22 10.0	5.519
10	7 47 42.96	2.6007	26 16 33.8	5.688
11	7 50 18.77	2.5928	26 10 47.5	5.855
12	7 52 54.10	2.5848	26 4 51.2	6.021
13	7 55 28.95	2.5768	25 58 45.0	6.184
14	7 58 3.32	2.5687	25 52 29.1	6.346
15	8 0 37.20	2.5605	25 46 3.5	6.506
16	8 3 10.58	2.5522	25 39 28.4	6.664
17	8 5 43.46	2.5437	25 32 43.8	6.821
18	8 8 15.83	2.5352	25 25 49.9	6.975
19	8 10 47.69	2.5267	25 18 46.8	7.127
20	8 13 19.04	2.5182	25 11 34.6	7.278
21	8 15 49.88	2.5096	25 4 13.4	7.427
22	8 18 20.20	2.5009	24 56 43.4	7.573
23	8 20 49.99	2.4922	24 49 4.6	7.718
24	8 23 19.26	2.4834	N.24 41 17.2	7.861

WEDNESDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	8 23 19.26	2.4834	N.24 41 17.2	7.861
1	8 25 48.00	2.4746	24 33 21.3	8.002
2	8 28 16.21	2.4657	24 25 17.0	8.142
3	8 30 43.88	2.4568	24 17 4.3	8.279
4	8 33 11.02	2.4478	24 8 43.5	8.414
5	8 35 37.62	2.4389	24 0 14.6	8.547
6	8 38 3.69	2.4300	23 51 37.8	8.678
7	8 40 29.22	2.4210	23 42 53.2	8.808
8	8 42 54.21	2.4120	23 34 0.8	8.936
9	8 45 18.66	2.4030	23 25 0.8	9.062
10	8 47 42.57	2.3940	23 15 53.3	9.186
11	8 50 5.94	2.3849	23 6 38.5	9.307
12	8 52 28.76	2.3759	22 57 16.4	9.427
13	8 54 51.04	2.3669	22 47 47.2	9.546
14	8 57 12.79	2.3580	22 38 10.9	9.662
15	8 59 34.00	2.3490	22 28 27.7	9.777
16	9 1 54.67	2.3400	22 18 37.7	9.889
17	9 4 14.80	2.3310	22 8 41.0	9.999
18	9 6 34.39	2.3221	21 58 37.8	10.108
19	9 8 53.45	2.3132	21 48 28.1	10.215
20	9 11 11.97	2.3043	21 38 12.0	10.320
21	9 13 29.96	2.2954	21 27 49.7	10.423
22	9 15 47.42	2.2866	21 17 21.2	10.525
23	9 18 4.35	2.2778	N.21 6 46.7	10.624

THURSDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	9 20 20.76	2.2691	N.20 56 6.3	10.723
1	9 22 36.64	2.2604	20 45 20.0	10.819
2	9 24 52.00	2.2517	20 34 28.0	10.912
3	9 27 6.84	2.2431	20 23 30.5	11.004
4	9 29 21.17	2.2345	20 12 27.5	11.096
5	9 31 34.98	2.2259	20 1 19.0	11.186
6	9 33 48.28	2.2174	19 50 5.2	11.273
7	9 36 1.07	2.2090	19 38 46.2	11.359
8	9 38 13.36	2.2007	19 27 22.1	11.442
9	9 40 25.15	2.1924	19 15 53.1	11.524
10	9 42 36.44	2.1841	19 4 19.2	11.605
11	9 44 47.24	2.1759	18 52 40.5	11.685
12	9 46 57.55	2.1677	18 40 57.0	11.763
13	9 49 7.37	2.1597	18 29 9.0	11.838
14	9 51 16.71	2.1517	18 17 16.5	11.913
15	9 53 25.57	2.1437	18 5 19.5	11.986
16	9 55 33.95	2.1358	17 53 18.2	12.057
17	9 57 41.87	2.1281	17 41 12.7	12.126
18	9 59 49.32	2.1204	17 29 3.1	12.194
19	10 1 56.31	2.1127	17 16 49.4	12.261
20	10 4 2.84	2.1051	17 4 31.8	12.326
21	10 6 8.92	2.0976	16 52 10.3	12.390
22	10 8 14.55	2.0902	16 39 45.0	12.452
23	10 10 19.74	2.0826	16 27 16.0	12.512
24	10 12 24.48	2.0754	N.16 14 43.5	12.571

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	10 12 24.48	2.0754	N.16 14 43.5	12.571
1	10 14 28.79	2.0682	16 2 7.5	12.629
2	10 16 32.67	2.0612	15 49 28.0	12.687
3	10 18 36.13	2.0542	15 36 45.0	12.743
4	10 20 39.17	2.0472	15 23 58.8	12.797
5	10 22 41.79	2.0402	15 11 9.4	12.849
6	10 24 43.99	2.0333	14 58 16.9	12.900
7	10 26 45.79	2.0267	14 45 21.4	12.950
8	10 28 47.19	2.0201	14 32 22.9	12.999
9	10 30 48.20	2.0136	14 19 21.5	13.047
10	10 32 48.82	2.0071	14 6 17.3	13.093
11	10 34 49.05	2.0007	13 53 10.4	13.138
12	10 36 48.90	1.9943	13 40 0.8	13.182
13	10 38 48.37	1.9882	13 26 48.6	13.224
14	10 40 47.48	1.9821	13 13 33.9	13.265
15	10 42 46.22	1.9760	13 0 16.8	13.304
16	10 44 44.60	1.9700	12 46 57.4	13.343
17	10 46 42.62	1.9641	12 33 35.6	13.382
18	10 48 40.29	1.9583	12 20 11.6	13.418
19	10 50 37.62	1.9527	12 6 45.5	13.453
20	10 52 34.61	1.9471	11 53 17.2	13.488
21	10 54 31.27	1.9416	11 39 46.9	13.521
22	10 56 27.60	1.9361	11 26 14.7	13.553
23	10 58 23.60	1.9307	N.11 12 40.5	13.585

SATURDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	11 0 19.28	1.9254	N.10 59 4.5	13.614
1	11 2 14.65	1.9203	10 45 26.8	13.643
2	11 4 9.72	1.9152	10 31 47.3	13.672
3	11 6 4.48	1.9102	10 18 6.2	13.698
4	11 7 58.94	1.9053	10 4 23.5	13.724
5	11 9 53.12	1.9006	9 50 39.3	13.749
6	11 11 47.01	1.8959	9 36 53.6	13.773
7	11 13 40.62	1.8912	9 23 6.5	13.796
8	11 15 33.95	1.8866	9 9 18.1	13.817
9	11 17 27.01	1.8821	8 55 28.4	13.838
10	11 19 19.80	1.8778	8 41 37.5	13.858
11	11 21 12.34	1.8735	8 27 45.4	13.878
12	11 23 4.62	1.8693	8 13 52.1	13.897
13	11 24 56.65	1.8652	7 59 57.8	13.914
14	11 26 48.44	1.8612	7 46 2.5	13.930
15	11 28 39.99	1.8573	7 32 6.2	13.946
16	11 30 31.31	1.8534	7 18 9.0	13.961
17	11 32 22.40	1.8496	7 4 10.9	13.975
18	11 34 13.26	1.8459	6 50 12.0	13.988
19	11 36 3.91	1.8424	6 36 12.3	14.000
20	11 37 54.35	1.8389	6 22 12.0	14.011
21	11 39 44.58	1.8355	6 8 11.0	14.022
22	11 41 34.61	1.8322	5 54 9.4	14.031
23	11 43 24.44	1.8289	5 40 7.3	14.039
24	11 45 14.08	1.8257	N. 5 26 4.7	14.047

SUNDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 45 14.08	1.8257	N. 5 26 4.7	14.047
1	11 47 3.53	1.8227	5 12 1.7	14.054
2	11 48 52.80	1.8197	4 57 58.2	14.061
3	11 50 41.90	1.8169	4 43 54.3	14.067
4	11 52 30.83	1.8141	4 29 50.1	14.072
5	11 54 19.59	1.8113	4 15 45.7	14.076
6	11 56 8.19	1.8087	4 1 41.0	14.079
7	11 57 56.63	1.8062	3 47 36.2	14.082
8	11 59 44.93	1.8037	3 33 31.2	14.084
9	12 1 33.08	1.8013	3 19 26.1	14.085
10	12 3 21.09	1.7991	3 5 21.0	14.085
11	12 5 8.97	1.7969	2 51 15.9	14.084
12	12 6 56.71	1.7947	2 37 10.9	14.083
13	12 8 44.33	1.7927	2 23 5.9	14.082
14	12 10 31.83	1.7907	2 9 1.1	14.079
15	12 12 19.22	1.7889	1 54 56.5	14.075
16	12 14 6.50	1.7871	1 40 52.1	14.071
17	12 15 53.67	1.7853	1 26 48.0	14.067
18	12 17 40.73	1.7836	1 12 44.1	14.062
19	12 19 27.70	1.7821	0 58 40.6	14.055
20	12 21 14.58	1.7807	0 44 37.5	14.048
21	12 23 1.38	1.7793	0 30 34.8	14.041
22	12 24 48.10	1.7780	0 16 32.6	14.032
23	12 26 34.74	1.7768	N. 0 2 30.9	14.023

MONDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 28 21.31	1.7757	S. 0 11 30.2	14.013
1	12 30 7.82	1.7746	0 25 30.7	14.003
2	12 31 54.26	1.7735	0 39 30.6	13.993
3	12 33 40.64	1.7726	0 53 29.9	13.982
4	12 35 26.97	1.7718	1 7 28.4	13.969
5	12 37 13.26	1.7711	1 21 26.2	13.956
6	12 38 59.50	1.7704	1 35 23.2	13.942
7	12 40 45.70	1.7698	1 49 19.3	13.928
8	12 42 31.87	1.7693	2 3 14.6	13.914
9	12 44 18.02	1.7689	2 17 9.0	13.898
10	12 46 4.14	1.7685	2 31 2.4	13.882
11	12 47 50.24	1.7683	2 44 54.8	13.865
12	12 49 36.33	1.7681	2 58 46.2	13.848
13	12 51 22.41	1.7679	3 12 36.6	13.830
14	12 53 8.48	1.7678	3 26 25.8	13.810
15	12 54 54.55	1.7679	3 40 13.8	13.790
16	12 56 40.63	1.7681	3 54 0.6	13.770
17	12 58 26.72	1.7682	4 7 46.2	13.750
18	13 0 12.81	1.7684	4 21 30.6	13.729
19	13 1 58.92	1.7688	4 35 13.7	13.706
20	13 3 45.06	1.7692	4 48 55.4	13.683
21	13 5 31.22	1.7696	5 2 35.7	13.660
22	13 7 17.41	1.7702	5 16 14.6	13.637
23	13 9 3.64	1.7709	5 29 52.1	13.612
24	13 10 49.91	1.7716	S. 5 43 28.1	13.587

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 10 49.91	1.7716	S. 5 43 28.1	13.587
1	13 12 36.23	1.7723	5 57 2.6	13.561
2	13 14 22.59	1.7731	6 10 35.5	13.534
3	13 16 9.00	1.7740	6 24 6.7	13.506
4	13 17 55.47	1.7750	6 37 36.2	13.477
5	13 19 42.00	1.7761	6 51 4.0	13.449
6	13 21 28.60	1.7773	7 4 30.1	13.420
7	13 23 15.27	1.7785	7 17 54.4	13.390
8	13 25 2.02	1.7797	7 31 16.9	13.360
9	13 26 48.84	1.7810	7 44 37.6	13.329
10	13 28 35.74	1.7824	7 57 56.4	13.297
11	13 30 22.73	1.7840	8 11 13.2	13.264
12	13 32 9.82	1.7856	8 24 28.0	13.230
13	13 33 57.00	1.7872	8 37 40.8	13.196
14	13 35 44.28	1.7888	8 50 51.5	13.162
15	13 37 31.66	1.7906	9 4 0.2	13.127
16	13 39 19.15	1.7924	9 17 6.8	13.091
17	13 41 6.75	1.7943	9 30 11.1	13.054
18	13 42 54.46	1.7962	9 43 13.2	13.017
19	13 44 42.29	1.7982	9 56 13.1	12.979
20	13 46 30.25	1.8004	10 9 10.7	12.940
21	13 48 18.34	1.8026	10 22 5.9	12.900
22	13 50 6.56	1.8048	10 34 58.7	12.859
23	13 51 54.92	1.8071	S. 10 47 49.0	12.817

WEDNESDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 53 43.41	1.8094	S. 11 0 36.8	12.776
1	13 55 32.05	1.8119	11 13 22.1	12.734
2	13 57 20.84	1.8143	11 26 4.9	12.692
3	13 59 9.77	1.8168	11 38 45.1	12.648
4	14 0 58.86	1.8195	11 51 22.7	12.603
5	14 2 48.11	1.8222	12 3 57.5	12.558
6	14 4 37.52	1.8249	12 16 29.6	12.512
7	14 6 27.09	1.8276	12 28 58.9	12.465
8	14 8 16.83	1.8305	12 41 25.4	12.417
9	14 10 6.75	1.8335	12 53 49.0	12.369
10	14 11 56.85	1.8365	13 6 9.7	12.320
11	14 13 47.13	1.8395	13 18 27.4	12.270
12	14 15 37.59	1.8426	13 30 42.1	12.220
13	14 17 28.24	1.8457	13 42 53.8	12.168
14	14 19 19.08	1.8489	13 55 2.3	12.116
15	14 21 10.11	1.8522	14 7 7.7	12.063
16	14 23 1.34	1.8555	14 19 9.9	12.010
17	14 24 52.77	1.8588	14 31 8.9	11.956
18	14 26 44.40	1.8622	14 43 4.6	11.901
19	14 28 36.24	1.8657	14 54 57.0	11.845
20	14 30 28.29	1.8693	15 6 46.0	11.787
21	14 32 20.56	1.8729	15 18 31.5	11.729
22	14 34 13.04	1.8765	15 30 13.5	11.671
23	14 36 5.74	1.8803	15 41 52.0	11.612
24	14 37 58.67	1.8841	S. 15 53 26.9	11.552

THURSDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 37 58.67	1.8841	S. 15 53 26.9	11.552
1	14 39 51.83	1.8878	16 4 58.2	11.491
2	14 41 45.21	1.8916	16 16 25.8	11.429
3	14 43 38.82	1.8955	16 27 49.7	11.367
4	14 45 32.67	1.8995	16 39 9.8	11.303
5	14 47 26.76	1.9034	16 50 26.1	11.239
6	14 49 21.08	1.9074	17 1 38.5	11.174
7	14 51 15.65	1.9116	17 12 47.0	11.108
8	14 53 10.47	1.9157	17 23 51.5	11.042
9	14 55 5.53	1.9198	17 34 52.0	10.974
10	14 57 0.85	1.9241	17 45 48.4	10.905
11	14 58 56.42	1.9283	17 56 40.6	10.836
12	15 0 52.24	1.9325	18 7 28.7	10.766
13	15 2 48.32	1.9368	18 18 12.5	10.694
14	15 4 44.66	1.9412	18 28 52.0	10.622
15	15 6 41.27	1.9457	18 39 27.2	10.550
16	15 8 38.14	1.9501	18 49 58.0	10.476
17	15 10 35.28	1.9546	19 0 24.3	10.402
18	15 12 32.69	1.9591	19 10 46.2	10.327
19	15 14 30.37	1.9636	19 21 3.5	10.249
20	15 16 28.32	1.9682	19 31 16.1	10.171
21	15 18 26.55	1.9728	19 41 24.0	10.093
22	15 20 25.06	1.9774	19 51 27.2	10.014
23	15 22 23.84	1.9820	S. 20 1 25.7	9.935

FRIDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 24 22.90	1.9867	S. 20 11 19.4	9.854
1	15 26 22.24	1.9914	20 21 8.2	9.772
2	15 28 21.87	1.9962	20 30 52.0	9.689
3	15 30 21.78	2.0009	20 40 30.8	9.605
4	15 32 21.98	2.0057	20 50 4.6	9.520
5	15 34 22.47	2.0105	20 59 33.2	9.434
6	15 36 23.24	2.0153	21 8 56.7	9.348
7	15 38 24.30	2.0202	21 18 15.0	9.261
8	15 40 25.66	2.0251	21 27 28.0	9.172
9	15 42 27.31	2.0299	21 36 35.6	9.082
10	15 44 29.25	2.0348	21 45 37.8	8.992
11	15 46 31.48	2.0397	21 54 34.6	8.901
12	15 48 34.01	2.0446	22 3 25.9	8.808
13	15 50 36.83	2.0495	22 12 11.6	8.715
14	15 52 39.95	2.0544	22 20 51.7	8.622
15	15 54 43.36	2.0593	22 29 26.2	8.527
16	15 56 47.07	2.0642	22 37 54.9	8.430
17	15 58 51.07	2.0692	22 46 17.8	8.332
18	16 0 55.37	2.0742	22 54 34.8	8.234
19	16 2 59.97	2.0791	23 2 45.9	8.136
20	16 5 4.86	2.0840	23 10 51.1	8.037
21	16 7 10.05	2.0889	23 18 50.3	7.936
22	16 9 15.53	2.0938	23 26 43.4	7.834
23	16 11 21.31	2.0987	23 34 30.4	7.732
24	16 13 27.38	2.1037	S. 23 42 11.2	7.628

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 17.					**MONDAY 19.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	16 13 27.38	2.1037	S.23 42 11.2	7.628	0	17 59 28.99	2.2935	S.27 32 16.3	1.661
1	16 15 33.75	2.1086	23 49 45.8	7.524	1	18 1 46.67	2.2958	27 33 51.7	1.520
2	16 17 40.41	2.1134	23 57 14.1	7.417	2	18 4 4.49	2.2980	27 35 18.7	1.379
3	16 19 47.36	2.1183	24 4 35.9	7.310	3	18 6 22.43	2.3001	27 36 37.2	1.237
4	16 21 54.61	2.1232	24 11 51.3	7.203	4	18 8 40.50	2.3022	27 37 47.2	1.095
5	16 24 2.15	2.1280	24 19 0.3	7.096	5	18 10 58.69	2.3042	27 38 48.6	0.952
6	16 26 9.97	2.1328	24 26 2.8	6.987	6	18 13 17.00	2.3060	27 39 41.5	0.810
7	16 28 18.08	2.1376	24 32 58.7	6.876	7	18 15 35.41	2.3077	27 40 25.8	0.667
8	16 30 26.48	2.1424	24 39 47.9	6.765	8	18 17 53.93	2.3094	27 41 1.5	0.523
9	16 32 35.17	2.1472	24 46 30.5	6.654	9	18 20 12.54	2.3109	27 41 28.6	0.379
10	16 34 44.14	2.1519	24 53 6.4	6.541	10	18 22 31.24	2.3124	27 41 47.0	0.235
11	16 36 53.39	2.1566	24 59 35.4	6.427	11	18 24 50.03	2.3138	27 41 56.8	− 0.091
12	16 39 2.93	2.1612	25 5 57.6	6.312	12	18 27 8.90	2.3151	27 41 57.9	+ 0.054
13	16 41 12.74	2.1658	25 12 12.9	6.197	13	18 29 27.84	2.3162	27 41 50.3	0.199
14	16 43 22.83	2.1705	25 18 21.2	6.080	14	18 31 46.85	2.3173	27 41 34.0	0.343
15	16 45 33.20	2.1751	25 24 22.5	5.962	15	18 34 5.92	2.3182	27 41 9.1	0.489
16	16 47 43.84	2.1795	25 30 16.7	5.844	16	18 36 25.04	2.3191	27 40 35.4	0.635
17	16 49 54.74	2.1839	25 36 3.8	5.726	17	18 38 44.21	2.3199	27 39 52.9	0.781
18	16 52 5.91	2.1883	25 41 43.8	5.606	18	18 41 3.43	2.3207	27 39 1.7	0.927
19	16 54 17.34	2.1927	25 47 16.5	5.484	19	18 43 22.69	2.3212	27 38 1.7	1.072
20	16 56 29.04	2.1971	25 52 41.9	5.363	20	18 45 41.98	2.3217	27 36 53.0	1.217
21	16 58 41.00	2.2015	25 58 0.1	5.241	21	18 48 1.29	2.3220	27 35 35.6	1.363
22	17 0 53.22	2.2057	26 3 10.9	5.117	22	18 50 20.62	2.3223	27 34 9.4	1.510
23	17 3 5.69	2.2099	S.26 8 14.2	4.993	23	18 52 39.97	2.3225	S.27 32 34.4	1.656
	SUNDAY 18.					**TUESDAY 20.**			
0	17 5 18.41	2.2141	S.26 13 10.1	4.869	0	18 54 59.32	2.3226	S.27 30 50.7	1.802
1	17 7 31.38	2.2182	26 17 58.5	4.743	1	18 57 18.68	2.3226	27 28 58.2	1.948
2	17 9 44.59	2.2222	26 22 39.3	4.617	2	18 59 38.03	2.3224	27 26 56.9	2.094
3	17 11 58.04	2.2262	26 27 12.5	4.489	3	19 1 57.37	2.3222	27 24 46.9	2.240
4	17 14 11.73	2.2301	26 31 38.0	4.361	4	19 4 16.69	2.3219	27 22 28.1	2.386
5	17 16 25.65	2.2339	26 35 55.8	4.232	5	19 6 36.00	2.3216	27 20 0.6	2.532
6	17 18 39.80	2.2377	26 40 5.9	4.103	6	19 8 55.28	2.3210	27 17 24.3	2.677
7	17 20 54.18	2.2415	26 44 8.2	3.973	7	19 11 14.52	2.3204	27 14 39.3	2.822
8	17 23 8.78	2.2452	26 48 2.6	3.842	8	19 13 33.73	2.3198	27 11 45.6	2.968
9	17 25 23.60	2.2488	26 51 49.2	3.711	9	19 15 52.90	2.3191	27 8 43.1	3.114
10	17 27 38.63	2.2523	26 55 27.9	3.578	10	19 18 12.02	2.3182	27 5 31.9	3.259
11	17 29 53.87	2.2558	26 58 58.6	3.445	11	19 20 31.08	2.3172	27 2 12.0	3.403
12	17 32 9.32	2.2592	27 2 21.3	3.311	12	19 22 50.08	2.3162	26 58 43.5	3.547
13	17 34 24.97	2.2624	27 5 35.9	3.177	13	19 25 9.02	2.3150	26 55 6.3	3.692
14	17 36 40.81	2.2656	27 8 42.5	3.042	14	19 27 27.88	2.3138	26 51 20.5	3.836
15	17 38 56.84	2.2688	27 11 41.0	2.907	15	19 29 46.67	2.3125	26 47 26.0	3.980
16	17 41 13.06	2.2719	27 14 31.4	2.771	16	19 32 5.38	2.3111	26 43 22.9	4.123
17	17 43 29.47	2.2750	27 17 13.5	2.634	17	19 34 24.00	2.3096	26 39 11.2	4.266
18	17 45 46.06	2.2779	27 19 47.4	2.497	18	19 36 42.53	2.3081	26 34 51.0	4.408
19	17 48 2.82	2.2807	27 22 13.1	2.359	19	19 39 0.97	2.3064	26 30 22.2	4.551
20	17 50 19.74	2.2834	27 24 30.5	2.220	20	19 41 19.30	2.3046	26 25 44.9	4.693
21	17 52 36.82	2.2860	27 26 39.5	2.080	21	19 43 37.52	2.3028	26 20 59.1	4.834
22	17 54 54.06	2.2886	27 28 40.1	1.941	22	19 45 55.63	2.3009	26 16 4.8	4.975
23	17 57 11.45	2.2911	27 30 32.4	1.802	23	19 48 13.63	2.2990	26 11 2.1	5.115
24	17 59 28.99	2.2935	S.27 32 16.3	1.661	24	19 50 31.51	2.2969	S.26 5 51.0	5.255

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	19 50 31.51	2.2969	S.26 5 51.0	5.255
1	19 52 49.26	2.2948	26 0 31.5	5.395
2	19 55 6.89	2.2927	25 55 3.6	5.535
3	19 57 24.39	2.2905	25 49 27.3	5.673
4	19 59 41.75	2.2881	25 43 42.8	5.811
5	20 1 58.96	2.2857	25 37 50.0	5.949
6	20 4 16.03	2.2832	25 31 48.9	6.086
7	20 6 32.95	2.2807	25 25 39.6	6.222
8	20 8 49.72	2.2782	25 19 22.2	6.358
9	20 11 6.33	2.2755	25 12 56.6	6.494
10	20 13 22.78	2.2728	25 6 22.9	6.628
11	20 15 39.07	2.2701	24 59 41.2	6.762
12	20 17 55.20	2.2674	24 52 51.5	6.895
13	20 20 11.16	2.2645	24 45 53.8	7.028
14	20 22 26.94	2.2615	24 38 48.1	7.161
15	20 24 42.54	2.2586	24 31 34.5	7.292
16	20 26 57.97	2.2556	24 24 13.0	7.422
17	20 29 13.22	2.2526	24 16 43.8	7.552
18	20 31 28.28	2.2495	24 9 6.8	7.681
19	20 33 43.16	2.2464	24 1 22.1	7.809
20	20 35 57.85	2.2433	23 53 29.7	7.937
21	20 38 12.35	2.2401	23 45 29.6	8.065
22	20 40 26.66	2.2368	23 37 21.9	8.191
23	20 42 40.77	2.2336	S.23 29 6.7	8.316

THURSDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	20 44 54.69	2.2303	S.23 20 44.0	8.441
1	20 47 8.41	2.2270	23 12 13.8	8.564
2	20 49 21.93	2.2236	23 3 36.3	8.687
3	20 51 35.24	2.2202	22 54 51.4	8.809
4	20 53 48.35	2.2168	22 45 59.2	8.931
5	20 56 1.26	2.2135	22 36 59.7	9.052
6	20 58 13.97	2.2101	22 27 53.0	9.171
7	21 0 26.47	2.2066	22 18 39.2	9.289
8	21 2 38.76	2.2031	22 9 18.3	9.407
9	21 4 50.84	2.1996	21 59 50.3	9.525
10	21 7 2.71	2.1962	21 50 15.3	9.641
11	21 9 14.38	2.1927	21 40 33.4	9.756
12	21 11 25.84	2.1892	21 30 44.6	9.871
13	21 13 37.09	2.1857	21 20 48.9	9.984
14	21 15 48.13	2.1822	21 10 46.5	10.096
15	21 17 58.95	2.1786	21 0 37.4	10.207
16	21 20 9.56	2.1751	20 50 21.6	10.318
17	21 22 19.96	2.1717	20 39 59.2	10.428
18	21 24 30.16	2.1682	20 29 30.3	10.537
19	21 26 40.15	2.1647	20 18 54.8	10.645
20	21 28 49.93	2.1612	20 8 12.9	10.753
21	21 30 59.49	2.1577	19 57 24.6	10.858
22	21 33 8.85	2.1542	19 46 30.0	10.963
23	21 35 18.00	2.1508	19 35 29.1	11.067
24	21 37 26.95	2.1474	S.19 24 22.0	11.169

FRIDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	21 37 26.95	2.1474	S.19 24 22.0	11.169
1	21 39 35.69	2.1440	19 13 8.8	11.271
2	21 41 44.23	2.1406	19 1 49.4	11.373
3	21 43 52.56	2.1372	18 50 24.0	11.473
4	21 46 0.69	2.1338	18 38 52.6	11.572
5	21 48 8.62	2.1305	18 27 15.3	11.671
6	21 50 16.35	2.1272	18 15 32.1	11.768
7	21 52 23.88	2.1239	18 3 43.1	11.864
8	21 54 31.22	2.1207	17 51 48.4	11.959
9	21 56 38.36	2.1174	17 39 48.0	12.053
10	21 58 45.31	2.1142	17 27 42.0	12.147
11	22 0 52.07	2.1110	17 15 30.4	12.239
12	22 2 58.63	2.1078	17 3 13.3	12.330
13	22 5 5.01	2.1048	16 50 50.8	12.420
14	22 7 11.21	2.1018	16 38 22.9	12.510
15	22 9 17.23	2.0988	16 25 49.6	12.599
16	22 11 23.07	2.0958	16 13 11.0	12.686
17	22 13 28.73	2.0928	16 0 27.3	12.771
18	22 15 34.21	2.0890	15 47 38.5	12.856
19	22 17 39.52	2.0871	15 34 44.6	12.941
20	22 19 44.66	2.0843	15 21 45.6	13.024
21	22 21 49.64	2.0816	15 8 41.7	13.106
22	22 23 54.46	2.0789	14 55 32.9	13.187
23	22 25 59.11	2.0762	S.14 42 19.2	13.267

SATURDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	22 28 3.60	2.0736	S.14 29 0.8	13.346
1	22 30 7.94	2.0711	14 15 37.7	13.424
2	22 32 12.13	2.0685	14 2 9.9	13.502
3	22 34 16.16	2.0660	13 48 37.5	13.577
4	22 36 20.05	2.0637	13 35 0.6	13.652
5	22 38 23.80	2.0614	13 21 19.2	13.726
6	22 40 27.42	2.0592	13 7 33.5	13.799
7	22 42 30.90	2.0569	12 53 43.4	13.871
8	22 44 34.24	2.0547	12 39 49.0	13.942
9	22 46 37.46	2.0526	12 25 50.4	14.011
10	22 48 40.55	2.0505	12 11 47.7	14.079
11	22 50 43.52	2.0485	11 57 40.9	14.147
12	22 52 46.37	2.0466	11 43 30.0	14.214
13	22 54 49.11	2.0447	11 29 15.2	14.279
14	22 56 51.74	2.0429	11 14 56.5	14.343
15	22 58 54.26	2.0412	11 0 34.0	14.407
16	23 0 56.68	2.0396	10 46 7.7	14.469
17	23 2 59.01	2.0381	10 31 37.7	14.531
18	23 5 1.25	2.0366	10 17 4.0	14.591
19	22 7 3.40	2.0351	10 2 26.8	14.650
20	23 9 5.46	2.0336	9 47 46.0	14.708
21	23 11 7.43	2.0323	9 33 1.8	14.765
22	23 13 9.33	2.0311	9 18 14.2	14.821
23	23 15 11.16	2.0300	9 3 23.3	14.876
24	23 17 12.93	2.0289	S. 8 48 29.1	14.930

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 17 12.93	2.0289	S. 8 48 29.1	14.930
1	23 19 14.63	2.0278	8 33 31.7	14.982
2	23 21 16.27	2.0269	8 18 31.2	15.034
3	23 23 17.86	2.0261	8 3 27.6	15.085
4	23 25 19.40	2.0253	7 48 21.0	15.134
5	23 27 20.89	2.0245	7 33 11.5	15.182
6	23 29 22.34	2.0238	7 17 59.2	15.229
7	23 31 23.75	2.0233	7 2 44.1	15.275
8	23 33 25.14	2.0229	6 47 26.2	15.321
9	23 35 26.50	2.0224	6 32 5.6	15.365
10	23 37 27.83	2.0221	6 16 42.4	15.407
11	23 39 29.15	2.0219	6 1 16.7	15.449
12	23 41 30.46	2.0218	5 45 48.5	15.490
13	23 43 31.76	2.0217	5 30 17.9	15.529
14	23 45 33.06	2.0217	5 14 45.0	15.567
15	23 47 34.36	2.0218	4 59 9.8	15.605
16	23 49 35.67	2.0220	4 43 32.4	15.641
17	23 51 37.00	2.0222	4 27 52.9	15.676
18	23 53 38.34	2.0225	4 12 11.3	15.710
19	23 55 39.70	2.0230	3 56 27.7	15.742
20	23 57 41.10	2.0236	3 40 42.2	15.773
21	23 59 42.53	2.0242	3 24 54.9	15.803
22	0 1 44.00	2.0249	3 9 5.8	15.833
23	0 3 45.52	2.0257	S. 2 53 14.9	15.862

MONDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	0 5 47.08	2.0265	S. 2 37 22.4	15.888
1	0 7 48.70	2.0275	2 21 28.3	15.914
2	0 9 50.38	2.0285	2 5 32.7	15.938
3	0 11 52.12	2.0296	1 49 35.7	15.962
4	0 13 53.93	2.0308	1 33 37.3	15.983
5	0 15 55.82	2.0322	1 17 37.7	16.003
6	0 17 57.79	2.0336	1 1 36.9	16.023
7	0 19 59.85	2.0351	0 45 34.9	16.042
8	0 22 2.00	2.0366	0 29 31.9	16.059
9	0 24 4.24	2.0383	S. 0 13 27.9	16.075
10	0 26 6.59	2.0401	N. 0 2 37.1	16.090
11	0 28 9.05	2.0419	0 18 42.9	16.103
12	0 30 11.62	2.0438	0 34 49.4	16.114
13	0 32 14.31	2.0459	0 50 56.6	16.125
14	0 34 17.13	2.0481	1 7 4.4	16.135
15	0 36 20.08	2.0503	1 23 12.8	16.143
16	0 38 23.17	2.0525	1 39 21.6	16.150
17	0 40 26.39	2.0549	1 55 30.8	16.156
18	0 42 29.76	2.0575	2 11 40.3	16.160
19	0 44 33.29	2.0602	2 27 50.0	16.163
20	0 46 36.98	2.0629	2 43 59.9	16.165
21	0 48 40.83	2.0656	3 0 9.8	16.164
22	0 50 44.85	2.0685	3 16 19.6	16.163
23	0 52 49.05	2.0715	3 32 29.4	16.162
24	0 54 53.43	2.0745	N. 3 48 39.0	16.158

TUESDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
	h m s	s	° ′ ″	″
0	0 54 53.43	2.0745	N. 3 48 39.0	16.158
1	0 56 57.99	2.0777	4 4 48.3	16.152
2	0 59 2.75	2.0810	4 20 57.2	16.145
3	1 1 7.71	2.0843	4 37 5.7	16.137
4	1 3 12.87	2.0877	4 53 13.7	16.128
5	1 5 18.24	2.0913	5 9 21.1	16.117
6	1 7 23.83	2.0950	5 25 27.7	16.104
7	1 9 29.64	2.0987	5 41 33.5	16.090
8	1 11 35.67	2.1024	5 57 38.5	16.075
9	1 13 41.93	2.1063	6 13 42.5	16.057
10	1 15 48.43	2.1104	6 29 45.4	16.039
11	1 17 55.18	2.1145	6 45 47.2	16.020
12	1 20 2.17	2.1186	7 1 47.8	15.999
13	1 22 9.41	2.1229	7 17 47.1	15.976
14	1 24 16.92	2.1274	7 33 44.9	15.950
15	1 26 24.70	2.1319	7 49 41.1	15.924
16	1 28 32.75	2.1364	8 5 35.7	15.897
17	1 30 41.07	2.1410	8 21 28.7	15.868
18	1 32 49.67	2.1457	8 37 19.9	15.837
19	1 34 58.56	2.1506	8 53 9.2	15.805
20	1 37 7.74	2.1555	9 8 56.5	15.771
21	1 39 17.22	2.1605	9 24 41.7	15.735
22	1 41 27.00	2.1656	9 40 24.7	15.697
23	1 43 37.09	2.1708	N. 9 56 5.4	15.658

WEDNESDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
0	1 45 47.50	2.1761	N.10 11 43.7	15.617
1	1 47 58.23	2.1815	10 27 19.5	15.575
2	1 50 9.28	2.1868	10 42 52.7	15.532
3	1 52 20.65	2.1923	10 58 23.3	15.487
4	1 54 32.36	2.1980	11 13 51.1	15.438
5	1 56 44.41	2.2038	11 29 15.9	15.388
6	1 58 56.81	2.2096	11 44 37.7	15.337
7	2 1 9.56	2.2154	11 59 56.4	15.285
8	2 3 22.66	2.2212	12 15 11.9	15.230
9	2 5 36.11	2.2272	12 30 24.0	15.173
10	2 7 49.93	2.2334	12 45 32.7	15.116
11	2 10 4.12	2.2396	13 0 37.9	15.056
12	2 12 18.68	2.2458	13 15 39.4	14.993
13	2 14 33.61	2.2521	13 30 37.1	14.930
14	2 16 48.93	2.2586	13 45 31.0	14.865
15	2 19 4.64	2.2651	14 0 20.9	14.797
16	2 21 20.74	2.2716	14 15 6.7	14.728
17	2 23 37.23	2.2781	14 29 48.3	14.657
18	2 25 54.11	2.2848	14 44 25.5	14.583
19	2 28 11.40	2.2916	14 58 58.3	14.506
20	2 30 29.10	2.2984	15 13 26.5	14.432
21	2 32 47.20	2.3052	15 27 50.1	14.353
22	2 35 5.72	2.3121	15 42 8.9	14.272
23	2 37 24.65	2.3190	15 56 22.7	14.188
24	2 39 44.00	2.3261	N.16 10 31.4	14.103

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	2 39 44.00	2.3261	N.16 10 31.4	14.103
1	2 42 3.78	2.3332	16 24 35.0	14.017
2	2 44 23.98	2.3403	16 38 33.4	13.928
3	2 46 44.61	2.3474	16 52 26.4	13.837
4	2 49 5.67	2.3547	17 6 13.9	13.744
5	2 51 27.17	2.3620	17 19 55.7	13.649
6	2 53 49.11	2.3693	17 33 31.8	13.553
7	2 56 11.49	2.3767	17 47 2.1	13.454
8	2 58 34.31	2.3840	18 0 26.3	13.353
9	3 0 57.57	2.3914	18 13 44.4	13.250
10	3 3 21.28	2.3989	18 26 56.3	13.145
11	3 5 45.44	2.4063	18 40 1.8	13.037
12	3 8 10.04	2.4137	18 53 0.8	12.928
13	3 10 35.09	2.4213	19 5 53.2	12.817
14	3 13 0.60	2.4289	19 18 38.9	12.704
15	3 15 26.56	2.4365	19 31 17.7	12.589
16	3 17 52.98	2.4441	19 43 49.6	12.472
17	3 20 19.85	2.4516	19 56 14.4	12.352
18	3 22 47.17	2.4592	20 8 31.9	12.231
19	3 25 14.95	2.4667	20 20 42.1	12.107
20	3 27 43.18	2.4743	20 32 44.8	11.982
21	3 30 11.87	2.4819	20 44 39.9	11.854
22	3 32 41.01	2.4895	20 56 27.3	11.724
23	3 35 10.61	2.4971	N.21 8 6.8	11.592

FRIDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	3 37 40.66	2.5046	N.21 19 38.4	11.459
1	3 40 11.16	2.5121	21 31 1.9	11.323
2	3 42 42.11	2.5196	21 42 17.2	11.185
3	3 45 13.51	2.5271	21 53 24.1	11.044
4	3 47 45.36	2.5345	22 4 22.5	10.903
5	3 50 17.65	2.5418	22 15 12.4	10.760
6	3 52 50.38	2.5492	22 25 53.7	10.614
7	3 55 23.55	2.5565	22 36 26.1	10.466
8	3 57 57.16	2.5637	22 46 49.6	10.316
9	4 0 31.20	2.5709	22 57 4.0	10.163
10	4 3 5.67	2.5780	23 7 9.2	10.010
11	4 5 40.56	2.5851	23 17 5.2	9.855
12	4 8 15.88	2.5922	23 26 51.8	9.697
13	4 10 51.62	2.5991	23 36 28.9	9.537
14	4 13 27.77	2.6059	23 45 56.3	9.376
15	4 16 4.32	2.6126	23 55 14.0	9.212
16	4 18 41.28	2.6193	24 4 21.8	9.047
17	4 21 18.64	2.6260	24 13 19.7	8.881
18	4 23 56.40	2.6326	24 22 7.5	8.712
19	4 26 34.55	2.6389	24 30 45.1	8.542
20	4 29 13.07	2.6452	24 39 12.5	8.370
21	4 31 51.97	2.6514	24 47 29.5	8.196
22	4 34 31.24	2.6575	24 55 36.0	8.021
23	4 37 10.87	2.6634	25 3 32.0	7.844
24	4 39 50.85	2.6692	N.25 11 17.3	7.665

SATURDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	4 39 50.85	2.6692	N.25 11 17.3	7.665
1	4 42 31.18	2.6750	25 18 51.8	7.485
2	4 45 11.85	2.6807	25 26 15.5	7.303
3	4 47 52.86	2.6862	25 33 28.2	7.120
4	4 50 34.19	2.6914	25 40 29.9	6.935
5	4 53 15.83	2.6965	25 47 20.4	6.748
6	4 55 57.77	2.7015	25 53 59.7	6.561
7	4 58 40.01	2.7064	26 0 27.7	6.372
8	5 1 22.54	2.7112	26 6 44.4	6.182
9	5 4 5.35	2.7157	26 12 49.6	5.990
10	5 6 48.43	2.7201	26 18 43.2	5.797
11	5 9 31.76	2.7243	26 24 25.3	5.604
12	5 12 15.34	2.7283	26 29 55.7	5.409
13	5 14 59.16	2.7322	26 35 14.4	5.213
14	5 17 43.21	2.7359	26 40 21.3	5.016
15	5 20 27.47	2.7394	26 45 16.3	4.817
16	5 23 11.94	2.7427	26 49 59.4	4.618
17	5 25 56.60	2.7458	26 54 30.5	4.418
18	5 28 41.44	2.7488	26 58 49.6	4.217
19	5 31 26.46	2.7516	27 2 56.6	4.016
20	5 34 11.63	2.7541	27 6 51.5	3.813
21	5 36 56.95	2.7565	27 10 34.2	3.610
22	5 39 42.47	2.7587	27 14 4.7	3.407
23	5 42 27.99	2.7607	N.27 17 23.0	3.202

SUNDAY, JANUARY 1, 1893.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	5 45 13.69	2.7624	N.27 20 29.0	2.997

PHASES OF THE MOON.

		d	h	m
○ Full Moon	Dec.	3	14	17.2
☾ Last Quarter		10	14	29.6
● New Moon		18	20	12.8
☽ First Quarter		26	9	22.5

		d	h
☾ Perigee	Dec.	2	16.3
☾ Apogee		15	1.3
☾ Perigee		31	0.1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Fomalhaut	W.	62 56 1	2279	64 42 31	2263	66 29 25	2249	68 16 40	2235
	MARS	W.	50 12 10	2249	51 59 24	2239	53 46 53	2230	55 34 36	2222
	JUPITER	W.	18 15 25	2048	20 7 45	2039	22 0 19	2030	23 53 7	2022
	Aldebaran	E.	35 16 35	2194	33 27 59	2199	31 39 30	2208	29 51 14	2221
	Pollux	E.	78 32 21	2056	76 40 14	2046	74 47 52	2038	72 55 17	2030
2	Fomalhaut	W.	77 17 19	2186	79 6 7	2180	80 55 4	2176	82 44 8	2172
	MARS	W.	64 36 1	2190	66 24 44	2185	68 13 34	2182	70 2 29	2180
	JUPITER	W.	33 19 52	1993	35 13 38	1989	37 7 30	1986	39 1 27	1984
	Pollux	E.	63 29 39	2001	61 36 6	1998	59 42 28	1994	57 48 45	1992
	Regulus	E.	100 0 41	2012	98 7 25	2008	96 14 3	2005	94 20 36	2003
3	MARS	W.	79 7 35	2179	80 56 34	2181	82 45 30	2184	84 34 21	2189
	JUPITER	W.	48 31 39	1984	50 25 38	1986	52 19 34	1989	54 13 25	1994
	α Arietis	W.	28 10 6	2290	29 56 20	2260	31 43 19	2236	33 30 53	2217
	Pollux	E.	48 19 42	1993	46 25 56	1996	44 32 15	1999	42 38 39	2003
	Regulus	E.	84 52 52	2003	82 59 22	2005	81 5 55	2009	79 12 34	2012
4	JUPITER	W.	63 40 40	2025	65 33 35	2033	67 26 17	2042	69 18 45	2053
	α Arietis	W.	42 33 57	2174	44 23 4	2173	46 12 12	2174	48 1 18	2176
	Pollux	E.	33 12 43	2036	31 20 5	2046	29 27 42	2055	27 35 34	2066
	Regulus	E.	69 47 47	2044	67 55 22	2053	66 3 11	2062	64 11 14	2073
5	JUPITER	W.	78 36 54	2112	80 27 35	2125	82 17 56	2139	84 7 55	2154
	α Arietis	W.	57 5 13	2209	58 53 27	2219	60 41 26	2230	62 29 9	2242
	Aldebaran	W.	26 59 17	2323	28 44 43	2313	30 30 23	2309	32 16 9	2306
	Regulus	E.	54 55 50	2136	53 5 45	2149	51 16 1	2165	49 26 40	2180
	SATURN	E.	97 14 14	2138	95 24 13	2151	93 34 32	2166	91 45 13	2180
6	α Arietis	W.	71 23 0	2311	73 8 43	2327	74 54 4	2343	76 39 1	2360
	Aldebaran	W.	41 4 15	2336	42 49 22	2347	44 34 13	2359	46 18 47	2372
	Regulus	E.	40 26 9	2269	38 39 24	2288	36 53 7	2309	35 7 20	2331
	SATURN	E.	82 44 18	2260	80 57 20	2277	79 10 47	2295	77 24 40	2312
	Spica	E.	94 24 23	2245	92 37 2	2262	90 50 7	2280	89 3 38	2297
7	Aldebaran	W.	54 56 38	2446	56 39 7	2462	58 21 13	2480	60 2 55	2496
	SATURN	E.	68 40 38	2405	66 57 10	2424	65 14 9	2443	63 31 35	2462
	Spica	E.	80 17 45	2389	78 33 55	2409	76 50 33	2428	75 7 38	2447
8	Aldebaran	W.	68 25 24	2585	70 4 40	2602	71 43 32	2621	73 21 59	2638
	Pollux	W.	24 10 18	2545	25 50 29	2562	27 30 16	2580	29 9 38	2599
	SATURN	E.	55 5 31	2558	53 25 38	2577	51 46 11	2596	50 7 10	2614
	Spica	E.	66 39 49	2543	64 59 36	2562	63 19 49	2582	61 40 29	2601
	VENUS	E.	86 11 52	2954	84 40 42	2975	83 9 58	2997	81 39 41	3017
	SUN	E.	120 47 37	2886	119 15 0	2906	117 42 49	2926	116 11 3	2946
9	Aldebaran	W.	81 28 16	2726	83 4 21	2744	84 40 3	2760	86 15 23	2777
	Pollux	W.	37 20 23	2687	38 57 21	2704	40 33 56	2720	42 10 9	2737
	SATURN	E.	41 58 21	2705	40 21 48	2722	38 45 38	2740	37 9 51	2757
	Spica	E.	53 30 13	2693	51 53 24	2711	50 16 59	2729	48 40 58	2747
	VENUS	E.	74 14 33	3118	72 46 45	3138	71 19 21	3157	69 52 20	3175
	SUN	E.	108 38 30	3044	107 9 12	3064	105 40 18	3082	104 11 46	3101

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Fomalhaut	W.	70° 4′ 15″	2223	71° 52′ 8″	2212	73° 40′ 18″	2202	75° 28′ 42″	2194
	Mars	W.	57 22 31	2214	59 10 38	2206	60 58 57	2200	62 47 25	2194
	Jupiter	W.	25 46 7	2014	27 39 19	2008	29 32 41	2001	31 26 13	1997
	Aldebaran	E.	28 3 18	2239	26 15 49	2264	24 28 56	2297	22 42 52	2342
	Pollux	E.	71 2 30	2023	69 9 32	2016	67 16 23	2010	65 23 5	2005
2	Fomalhaut	W.	84 33 18	2169	86 22 32	2168	88 11 48	2167	90 1 5	2168
	Mars	W.	71 51 27	2178	73 40 28	2176	75 29 31	2176	77 18 34	2178
	Jupiter	W.	40 55 27	1982	42 49 29	1981	44 43 33	1981	46 37 37	1982
	Pollux	E.	55 54 58	1991	54 1 10	1990	52 7 20	1990	50 13 30	1991
	Regulus	E.	92 27 6	2001	90 33 33	2000	89 39 59	2000	86 46 25	2001
3	Mars	W.	86 23 5	2194	88 11 42	2199	90 0 11	2206	91 48 30	2213
	Jupiter	W.	56 7 9	1998	58 0 46	2004	59 54 14	2010	61 47 32	2017
	α Arietis	W.	35 18 55	2202	37 7 19	2190	38 56 1	2188	40 44 55	2177
	Pollux	E.	40 45 10	2009	38 51 49	2014	36 58 36	2021	35 5 34	2028
	Regulus	E.	77 19 19	2017	75 26 12	2023	73 33 13	2029	71 40 24	2037
4	Jupiter	W.	71 10 57	2063	73 2 53	2074	74 54 32	2086	76 45 53	2099
	α Arietis	W.	49 50 21	2180	51 39 18	2186	53 28 7	2192	55 16 46	2200
	Pollux	E.	25 43 43	2078	23 52 10	2091	22 0 57	2105	20 10 5	2120
	Regulus	E.	62 19 33	2084	60 28 9	2096	58 37 3	2108	56 46 16	2122
5	Jupiter	W.	85 57 32	2169	87 46 46	2185	89 35 36	2201	91 24 2	2217
	α Arietis	W.	64 16 34	2254	66 3 41	2268	67 50 28	2281	69 36 55	2296
	Aldebaran	W.	34 1 57	2309	35 47 43	2313	37 33 23	2320	39 18 54	2336
	Regulus	E.	47 37 43	2196	45 49 10	2214	44 1 3	2231	42 13 22	2250
	Saturn	E.	89 56 15	2195	88 7 40	2211	86 19 29	2227	84 31 41	2243
6	α Arietis	W.	78 23 33	2377	80 7 41	2395	81 51 23	2412	83 34 40	2430
	Aldebaran	W.	48 3 2	2385	49 46 58	2400	51 30 33	2415	53 13 46	2430
	Regulus	E.	33 22 5	2353	31 37 22	2375	29 53 11	2399	28 9 35	2423
	Saturn	E.	75 38 58	2331	73 53 43	2349	72 8 55	2367	70 24 33	2386
	Spica	E.	87 17 34	2315	85 31 57	2333	83 46 46	2352	82 2 2	2371
7	Aldebaran	W.	61 44 14	2514	63 25 8	2531	65 5 38	2549	66 45 43	2566
	Saturn	E.	61 49 29	2482	60 7 50	2500	58 26 37	2520	56 45 51	2538
	Spica	E.	73 25 10	2466	71 43 9	2486	70 1 36	2504	68 20 29	2524
8	Aldebaran	W.	75 0 2	2656	76 37 41	2674	78 14 56	2691	79 51 48	2709
	Pollux	W.	30 48 35	2616	32 27 8	2634	34 5 17	2652	35 43 2	2669
	Saturn	E.	48 28 34	2632	46 50 23	2652	45 12 38	2669	43 35 17	2688
	Spica	E.	60 1 35	2620	58 23 7	2638	56 45 4	2657	55 7 26	2675
	Venus	E.	80 9 49	3037	78 40 22	3058	77 11 21	3078	75 42 45	3098
	Sun	E.	114 39 43	2966	113 8 48	2985	111 38 17	3005	110 8 11	3026
9	Aldebaran	W.	87 50 21	2793	89 24 58	2810	90 59 13	2826	92 33 7	2842
	Pollux	W.	43 46 0	2753	45 21 29	2769	46 56 37	2785	48 31 25	2801
	Saturn	E.	35 34 27	2773	33 59 24	2790	32 24 43	2805	30 50 22	2821
	Spica	E.	47 5 20	2764	45 30 5	2781	43 55 12	2798	42 20 41	2815
	Venus	E.	68 25 41	3194	66 59 25	3212	65 33 30	3231	64 7 57	3247
	Sun	E.	102 43 37	3119	101 15 50	3136	99 48 24	3153	98 21 19	3170

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Pollux	W.	50° 5′ 52″	2815	51° 40′ 0″	2831	53° 13′ 48″	2845	54° 47′ 18″	2859
	Spica	E.	40 46 32	2831	39 12 44	2847	37 39 17	2862	36 6 10	2879
	Venus	E.	62 42 44	3265	61 17 52	3282	59 53 19	3298	58 29 5	3314
	Sun	E.	96 54 34	3187	95 28 9	3203	94 2 3	3219	92 36 16	3235
11	Pollux	W.	62 30 27	2923	64 2 17	2934	65 33 53	2946	67 5 14	2956
	Regulus	W.	26 16 16	2981	27 46 52	2988	29 17 20	2994	30 47 40	3001
	Venus	E.	51 32 24	3387	50 9 53	3401	48 47 38	3414	47 25 37	3427
	Sun	E.	85 31 46	3306	84 7 41	3318	82 43 50	3330	81 20 13	3342
12	Pollux	W.	74 38 51	3002	76 9 1	3011	77 39 0	3018	79 8 50	3026
	Regulus	W.	38 17 20	3033	39 46 52	3039	41 16 17	3045	42 45 34	3050
	Sun	E.	74 25 24	3394	73 3 1	3403	71 40 48	3412	70 18 45	3420
13	Pollux	W.	86 35 59	3054	88 5 5	3059	89 34 5	3063	91 3 0	3067
	Regulus	W.	50 10 26	3073	51 39 8	3077	53 7 46	3081	54 36 19	3083
	Sun	E.	63 30 36	3454	62 9 20	3458	60 48 9	3463	59 27 4	3468
14	Regulus	W.	61 58 20	3093	63 26 38	3094	64 54 55	3095	66 23 11	3095
	Saturn	W.	18 49 54	3101	20 18 3	3102	21 46 10	3103	23 14 16	3103
	Sun	E.	52 42 45	3484	51 22 3	3487	50 1 24	3488	48 40 47	3489
15	Regulus	W.	73 44 35	3091	75 12 55	3090	76 41 17	3088	78 9 41	3086
	Saturn	W.	30 34 47	3101	32 2 56	3100	33 31 6	3097	34 59 19	3096
	Spica	W.	19 47 48	3140	21 15 9	3130	22 42 42	3122	24 10 25	3115
	Sun	E.	41 57 59	3493	40 37 27	3493	39 16 55	3492	37 56 22	3492
16	Regulus	W.	85 32 28	3071	87 1 13	3068	88 30 2	3064	89 58 56	3060
	Saturn	W.	42 21 7	3081	43 49 40	3078	45 18 17	3073	46 46 59	3070
	Spica	W.	31 30 57	3085	32 59 25	3079	34 28 0	3074	35 56 41	3069
	Sun	E.	31 13 30	3489	29 52 54	3488	28 32 17	3489	27 11 41	3469
17	Saturn	W.	54 11 47	3046	55 41 3	3041	57 10 25	3035	58 39 54	3030
	Spica	W.	43 21 50	3040	44 51 13	3034	46 20 43	3028	47 50 21	3022
	Sun	E.	20 29 0	3504	19 8 40	3513	17 48 30	3524	16 28 32	3540
20	Sun	W.	13 51 22	3418	15 13 18	3380	16 35 57	3349	17 59 12	3325
	Fomalhaut	E.	51 18 53	3188	49 52 29	3194	48 26 13	3204	47 0 8	3214
	α Pegasi	E.	72 39 51	3271	71 15 6	3270	69 50 20	3271	68 25 35	3273
	Mars	E.	72 58 10	3110	71 30 13	3102	70 2 6	3095	68 33 50	3087
	Jupiter	E.	92 51 32	2885	91 18 54	2877	89 46 6	2870	88 13 9	2862
21	Sun	W.	25 1 36	3235	26 27 4	3221	27 52 48	3208	29 18 48	3195
	Mars	E.	61 10 5	3047	59 40 50	3039	58 11 26	3031	56 41 52	3023
	α Pegasi	E.	61 22 37	3294	59 58 19	3302	58 34 10	3311	57 10 11	3322
	Jupiter	E.	80 25 58	2825	78 52 3	2817	77 17 57	2809	75 43 41	2801
22	Sun	W.	36 32 24	3138	37 59 48	3126	39 27 26	3115	40 55 17	3105
	Mars	E.	49 11 29	2981	47 40 53	2973	46 10 7	2965	44 39 10	2957
	α Pegasi	E.	50 14 6	3406	48 51 56	3430	47 30 13	3458	46 9 2	3489
	Jupiter	E.	67 49 47	2761	66 14 28	2753	64 38 58	2744	63 3 17	2736
	α Arietis	E.	89 39 39	2811	88 5 26	2803	86 31 2	2795	84 56 27	2786

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	Pollux	W.	56° 20′ 29″	2873	57° 53′ 23″	2885	59° 26′ 1″	2898	60° 58′ 22″	2911
	Spica	E.	34 33 24	2894	33 0 58	2909	31 28 51	2925	29 57 4	2939
	Venus	E.	57 5 10	3330	55 41 33	3345	54 18 13	3359	52 55 10	3374
	Sun	E.	91 10 48	3249	89 45 37	3265	88 20 44	3278	86 56 7	3292
11	Pollux	W.	68 36 22	2966	70 7 17	2976	71 38 0	2985	73 8 31	2994
	Regulus	W.	32 17 52	3007	33 47 56	3014	35 17 52	3020	36 47 40	3026
	Venus	E.	46 3 51	3438	44 42 18	3450	43 20 58	3462	41 59 51	3472
	Sun	E.	79 56 50	3353	78 33 40	3365	77 10 43	3375	75 47 58	3385
12	Pollux	W.	80 38 31	3032	82 8 4	3039	83 37 29	3044	85 6 47	3049
	Regulus	W.	44 14 45	3056	45 43 49	3060	47 12 47	3065	48 41 39	3069
	Sun	E.	68 56 51	3427	67 35 5	3435	66 13 28	3441	64 51 58	3448
13	Pollux	W.	92 31 50	3070	94 0 36	3073	95 29 19	3075	96 57 59	3078
	Regulus	W.	56 4 49	3087	57 33 15	3088	59 1 39	3091	60 30 0	3091
	Sun	E.	58 6 4	3471	56 45 8	3476	55 24 17	3479	54 3 29	3482
14	Regulus	W.	67 51 27	3095	69 19 43	3095	70 47 59	3094	72 16 16	3092
	Saturn	W.	24 42 22	3104	26 10 27	3103	27 38 33	3102	29 6 40	3102
	Sun	E.	47 20 11	3491	45 59 37	3492	44 39 4	3492	43 18 31	3493
15	Regulus	W.	79 38 8	3083	81 6 38	3081	82 35 11	3078	84 3 48	3075
	Saturn	W.	36 27 34	3093	37 55 52	3090	39 24 14	3087	40 52 39	3085
	Spica	W.	25 38 16	3109	27 6 15	3102	28 34 22	3096	30 2 36	3091
	Sun	E.	36 35 49	3491	35 15 15	3491	33 54 41	3490	32 34 6	3489
16	Regulus	W.	91 27 54	3056	92 56 57	3052	94 26 6	3047	95 55 20	3042
	Saturn	W.	48 15 45	3065	49 44 37	3061	51 13 34	3056	52 42 37	3051
	Spica	W.	37 25 29	3063	38 54 24	3057	40 23 26	3052	41 52 34	3046
	Sun	E.	25 51 5	3490	24 30 30	3492	23 9 57	3494	21 49 26	3498
17	Saturn	W.	60 9 29	3025	61 39 11	3018	63 9 1	3013	64 38 58	3007
	Spica	W.	49 20 6	3016	50 49 59	3009	52 20 0	3003	53 50 9	2997
	Sun	E.	15 8 52	3561	13 49 35	3593	12 30 53	3639	11 13 1	3704
20	Sun	W.	19 22 55	3302	20 47 4	3283	22 11 35	3266	23 36 26	3250
	Fomalhaut	E.	45 34 15	3226	44 8 37	3242	42 43 17	3259	41 18 17	3279
	α Pegasi	E.	67 0 52	3276	65 36 12	3278	64 11 35	3282	62 47 3	3288
	Mars	E.	67 5 24	3079	65 36 49	3071	64 8 4	3063	62 39 9	3056
	Jupiter	E.	86 40 2	2855	85 6 46	2848	83 33 20	2840	81 59 44	2832
21	Sun	W.	30 45 3	3183	32 11 32	3171	33 38 16	3160	35 5 13	3148
	Mars	E.	55 12 8	3015	53 42 14	3006	52 12 9	2998	50 41 54	2990
	α Pegasi	E.	55 46 25	3334	54 22 53	3349	52 59 38	3365	51 36 41	3384
	Jupiter	E.	74 9 15	2794	72 34 39	2785	70 59 52	2778	69 24 55	2769
22	Sun	W.	42 23 20	3095	43 51 36	3083	45 20 6	3073	46 48 49	3062
	Mars	E.	43 8 3	2948	41 36 45	2939	40 5 16	2931	38 33 36	2922
	α Pegasi	E.	44 48 26	3525	43 28 30	3567	42 9 20	3614	40 51 1	3666
	Jupiter	E.	61 27 25	2727	59 51 21	2719	58 15 6	2710	56 38 39	2701
	α Arietis	E.	83 21 41	2778	81 46 44	2770	80 11 37	2761	78 36 18	2753

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	**Sun**	W.	48 17 45	3052	49 46 54	3041	51 16 16	3030	52 45 52	3019
	Mars	E.	37 1 45	2914	35 29 44	2905	33 57 32	2897	32 25 9	2888
	Jupiter	E.	55 2 1	2692	53 25 11	2683	51 48 8	2674	50 10 53	2664
	α Arietis	E.	77 0 49	2745	75 25 9	2737	73 49 18	2729	72 13 17	2721
24	**Sun**	W.	60 17 13	2965	61 48 10	2953	63 19 22	2942	64 50 48	2930
	α Aquilæ	W.	46 25 52	4572	47 28 41	4458	48 33 10	4353	49 39 14	4254
	Jupiter	E.	42 1 27	2616	40 22 54	2607	38 44 8	2596	37 5 8	2587
	α Arietis	E.	64 10 30	2681	62 33 25	2674	60 56 10	2666	59 18 45	2659
	Aldebaran	E.	94 25 37	2643	92 47 41	2634	91 9 32	2624	89 31 9	2613
25	**Sun**	W.	72 31 38	2872	74 4 33	2860	75 37 43	2848	77 11 8	2836
	α Aquilæ	W.	55 30 33	3864	56 44 29	3802	57 59 29	3743	59 15 31	3689
	α Arietis	E.	51 9 20	2627	49 31 2	2622	47 52 37	2618	46 14 6	2613
	Aldebaran	E.	81 15 43	2561	79 35 55	2551	77 55 53	2541	76 15 37	2530
26	**Sun**	W.	85 2 11	2775	86 37 11	2763	88 12 28	2750	89 48 1	2738
	α Aquilæ	W.	65 49 7	3463	67 10 13	3424	68 32 2	3389	69 54 31	3356
	α Arietis	E.	38 0 36	2610	36 21 55	2614	34 43 19	2621	33 4 52	2631
	Aldebaran	E.	67 50 38	2480	66 8 56	2469	64 26 59	2459	62 44 48	2450
27	**Sun**	W.	97 49 52	2677	99 27 3	2665	101 4 30	2653	102 42 13	2641
	α Aquilæ	W.	76 55 46	3218	78 21 34	3196	79 47 48	3175	81 14 27	3155
	Fomalhaut	W.	44 58 30	2708	46 34 59	2675	48 12 12	2646	49 50 5	2618
	Aldebaran	E.	54 10 35	2405	52 27 7	2396	50 43 27	2389	48 59 37	2382
	Pollux	E.	97 48 8	2337	96 3 2	2326	94 17 40	2315	92 32 2	2303
28	**Sun**	W.	110 54 45	2585	112 34 1	2574	114 13 32	2564	115 53 17	2553
	Fomalhaut	W.	58 8 20	2501	59 49 32	2482	61 31 11	2463	63 13 16	2446
	α Pegasi	W.	40 48 34	3164	42 15 26	3093	43 43 44	3029	45 13 21	2969
	Mars	W.	27 51 25	2472	29 33 18	2459	31 15 29	2447	32 57 57	2435
	Pollux	E.	83 39 47	2249	81 52 33	2239	80 5 3	2229	78 17 18	2218
29	Fomalhaut	W.	71 49 19	2374	73 33 31	2362	75 18 1	2351	77 2 46	2341
	α Pegasi	W.	52 57 56	2747	54 33 34	2713	56 9 56	2683	57 46 59	2654
	Mars	W.	41 34 20	2382	43 18 21	2373	45 2 35	2364	46 47 2	2356
	Jupiter	W.	26 58 22	2192	28 47 2	2184	30 35 53	2176	32 24 56	2169
	Pollux	E.	69 15 1	2174	67 25 54	2166	65 36 35	2159	63 47 5	2151
30	α Pegasi	W.	66 0 49	2546	67 40 58	2530	69 21 30	2515	71 2 22	2503
	Mars	W.	55 31 50	2322	57 17 26	2317	59 3 1	2312	60 48 43	2308
	Jupiter	W.	41 32 45	2139	43 22 45	2134	45 12 52	2130	47 3 5	2127
	α Arietis	W.	22 23 23	2574	24 2 54	2511	25 43 52	2458	27 26 4	2413
	Pollux	E.	54 36 58	2120	52 46 30	2116	50 55 56	2113	49 5 16	2109
	Regulus	E.	91 10 0	2130	89 19 46	2125	87 29 25	2120	85 38 57	2117
31	α Pegasi	W.	79 30 22	2462	81 12 29	2458	82 54 41	2455	84 36 57	2455
	Mars	W.	69 38 24	2297	71 24 28	2296	73 10 33	2296	74 56 38	2298
	Jupiter	W.	56 15 15	2117	58 5 48	2116	59 56 22	2117	61 46 55	2118
	α Arietis	W.	36 10 0	2279	37 56 30	2265	39 43 21	2252	41 30 31	2242
	Pollux	E.	39 50 52	2100	37 59 53	2101	36 8 55	2101	34 17 58	2103
	Regulus	E.	76 25 34	2107	74 34 46	2108	72 43 59	2109	70 53 13	2109

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Sun	W.	54° 15′ 41″	3008	55° 45′ 44″	2997	57° 16′ 0″	2986	58° 46′ 30″	2976
	Mars	E.	30 52 35	2880	29 19 51	2872	27 46 56	2864	26 13 51	2857
	Jupiter	E.	48 33 25	2655	46 55 45	2646	45 17 52	2636	43 39 46	2626
	α Arietis	E.	70 37 5	2713	69 0 42	2705	67 24 9	2697	65 47 25	2689
24	Sun	W.	66 22 29	2919	67 54 24	2907	69 26 34	2895	70 58 59	2884
	α Aquilæ	W.	50 46 49	4164	51 55 49	4081	53 6 9	4004	54 17 45	3931
	Jupiter	E.	35 25 55	2577	33 46 28	2566	32 6 46	2556	30 26 50	2545
	α Arietis	E.	57 41 10	2652	56 3 26	2645	54 25 32	2639	52 47 30	2633
	Aldebaran	E.	87 52 32	2603	86 13 41	2593	84 34 36	2583	82 55 17	2572
25	Sun	W.	78 44 49	2824	80 18 46	2812	81 52 58	2799	83 27 27	2788
	α Aquilæ	W.	60 32 30	3637	61 50 24	3589	63 9 10	3545	64 28 45	3502
	α Arietis	E.	44 35 29	2610	42 56 48	2609	41 18 5	2607	39 39 20	2608
	Aldebaran	E.	74 35 6	2520	72 54 21	2510	71 13 21	2499	69 32 7	2489
26	Sun	W.	91 23 51	2725	92 59 57	2713	94 36 19	2701	96 12 57	2689
	α Aquilæ	W.	71 17 38	3325	72 41 21	3295	74 5 38	3268	75 30 27	3242
	α Arietis	E.	31 26 39	2644	29 48 44	2662	28 11 13	2686	26 34 14	2716
	Aldebaran	E.	61 2 24	2440	59 19 46	2431	57 36 55	2422	55 53 51	2413
27	Sun	W.	104 20 12	2629	105 58 27	2618	107 36 58	2607	109 15 44	2596
	α Aquilæ	W.	82 41 30	3138	84 8 54	3121	85 36 38	3106	87 4 40	3093
	Fomalhaut	W.	51 28 36	2591	53 7 43	2566	54 47 24	2543	56 27 37	2522
	Aldebaran	E.	47 15 36	2375	45 31 26	2370	43 47 8	2365	42 2 43	2362
	Pollux	E.	90 46 7	2292	88 59 56	2281	87 13 29	2270	85 26 46	2260
28	Sun	W.	117 33 16	2544	119 13 28	2534	120 53 54	2525	122 34 32	2516
	Fomalhaut	W.	64 55 45	2430	66 38 37	2415	68 21 51	2401	70 5 25	2387
	α Pegasi	W.	46 44 12	2916	48 16 10	2868	49 49 10	2824	51 23 7	2784
	Mars	W.	34 40 42	2423	36 23 44	2412	38 7 1	2402	39 50 33	2391
	Pollux	E.	76 29 18	2209	74 41 4	2200	72 52 36	2191	71 3 55	2182
29	Fomalhaut	W.	78 47 46	2332	80 32 59	2323	82 18 25	2315	84 4 2	2308
	α Pegasi	W.	59 24 41	2629	61 2 57	2604	62 41 46	2583	64 21 4	2564
	Mars	W.	48 31 40	2348	50 16 30	2341	52 1 30	2334	53 46 40	2328
	Jupiter	W.	34 14 10	2162	36 3 35	2156	37 53 9	2149	39 42 53	2144
	Pollux	E.	61 57 23	2144	60 7 31	2137	58 17 29	2132	56 27 18	2126
30	α Pegasi	W.	72 43 31	2492	74 24 56	2482	76 6 34	2475	77 48 23	2467
	Mars	W.	62 34 31	2304	64 20 24	2302	66 6 21	2300	67 52 21	2298
	Jupiter	W.	48 53 23	2124	50 43 46	2121	52 34 13	2119	54 24 43	2118
	α Arietis	W.	29 9 20	2375	30 53 30	2345	32 38 24	2319	34 23 56	2297
	Pollux	E.	47 14 30	2106	45 23 40	2103	43 32 46	2102	41 41 50	2101
	Regulus	E.	83 48 24	2114	81 57 46	2112	80 7 5	2110	78 16 21	2108
31	α Pegasi	W.	86 19 14	2455	88 1 31	2455	89 43 47	2458	91 25 59	2462
	Mars	W.	76 42 41	2299	78 28 42	2301	80 14 40	2304	82 0 34	2308
	Jupiter	W.	63 37 26	2120	65 27 55	2122	67 18 20	2125	69 8 41	2129
	α Arietis	W.	43 17 56	2234	45 5 33	2227	46 53 20	2223	48 41 14	2220
	Pollux	E.	32 27 3	2105	30 36 12	2108	28 45 25	2112	26 54 44	2117
	Regulus	E.	69 2 28	2111	67 11 46	2114	65 21 8	2117	63 30 35	2120

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	18 9 54.20	−12.019	−20 19 25.7	+12.68	23 19.2
2	18 5 23.38	10.514	20 15 15.6	8.15	23 11.4
3	18 1 30.93	8.835	20 12 55.2	+ 3.54	23 4.3
4	17 58 20.08	7.061	20 12 24.7	− 0.96	22 57.9
5	17 55 52.22	5.262	20 13 39.8	5.25	22 52.2
6	17 54 7.32	− 3.489	−20 16 34.2	− 9.21	22 47.2
7	17 53 4.24	1.782	20 20 58.3	12.72	22 42.9
8	17 52 41.07	− 0.166	20 26 40.8	15.74	22 39.1
9	17 52 55.44	+ 1.344	20 33 30.0	18.26	22 36.0
10	17 53 44.68	2.739	20 41 13.3	20.26	22 33.4
11	17 55 6.02	+ 4.021	−20 49 38.6	−21.76	22 31.3
12	17 56 56.78	5.191	20 58 34.1	22.78	22 29.6
13	17 59 14.32	6.254	21 7 48.3	23.34	22 28.3
14	18 1 56.20	7.220	21 17 11.1	23.49	22 27.4
15	18 5 0.13	8.093	21 26 32.7	23.25	22 26.8
16	18 8 24.00	+ 8.884	−21 35 44.4	−22.67	22 26.6
17	18 12 5.94	9.599	21 44 38.2	21.77	22 26.6
18	18 16 4.19	10.245	21 53 7.2	20.60	22 26.8
19	18 20 17.22	10.830	22 1 5.1	19.18	22 27.3
20	18 24 43.61	11.360	22 8 26.1	17.53	22 28.0
21	18 29 22.13	+11.842	−22 15 5.0	−15.68	22 28.9
22	18 34 11.65	12.278	22 20 57.5	13.66	22 30.0
23	18 39 11.14	12.674	22 25 59.7	11.49	22 31.2
24	18 44 19.72	13.034	22 30 7.9	9.18	22 32.5
25	18 49 36.53	13.362	22 33 18.9	6.73	22 33.9
26	18 55 0.85	+13.661	−22 35 30.0	− 4.18	22 35.5
27	19 0 32.05	13.934	22 36 38.5	− 1.52	22 37.2
28	19 6 9.49	14.183	22 36 42.3	+ 1.22	22 38.9
29	19 11 52.66	14.411	22 35 39.4	4.04	22 40.8
30	19 17 41.04	14.618	22 33 28.0	6.93	22 42.7
31	19 23 34.19	+14.808	−22 30 6.5	+ 9.88	22 44.8
32	19 29 31.71	+14.983	−22 25 33.5	+12.88	22 46.8

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
	″	″	″	″	″	″	″
Semidiameter . .	4.9	4.4	3.9	3.5	3.2	3.0	2.8
Hor. Parallax . .	12.9	11.7	10.4	9.3	8.5	7.9	7.4

FEBRUARY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	19 29 31.71	+14.983	−22 25 33.5	+12.88	22 46.8
2	19 35 33.25	15.143	22 19 47.8	15.94	22 49.0
3	19 41 38.47	15.289	22 12 48.2	19.04	22 51.2
4	19 47 47.08	15.424	22 4 33.6	22.18	22 53.4
5	19 53 58.77	15.548	21 55 3.1	25.36	22 55.7
6	20 0 13.32	+15.662	−21 44 15.9	+28.58	22 58.1
7	20 6 30.49	15.767	21 32 11.1	31.82	23 0.5
8	20 12 50.09	15.865	21 18 48.3	35.09	23 2.9
9	20 19 11.95	15.955	21 4 6.7	38.38	23 5.4
10	20 25 35.89	16.039	20 48 5.8	41.70	23 7.9
11	20 32 1.76	+16.116	−20 30 45.1	+45.03	23 10.4
12	20 38 29.41	16.188	20 12 4.1	48.39	23 12.9
13	20 44 58.76	16.256	19 52 2.4	51.76	23 15.5
14	20 51 29.69	16.321	19 30 39.7	55.14	23 18.1
15	20 58 2.12	16.382	19 7 55.7	58.53	23 20.7
16	21 4 35.98	+16.440	−18 43 50.0	+61.94	23 23.4
17	21 11 11.20	16.495	18 18 22.4	65.36	23 26.0
18	21 17 47.72	16.548	17 51 32.7	68.79	23 28.7
19	21 24 25.50	16.600	17 23 20.7	72.22	23 31.5
20	21 31 4.54	16.652	16 53 46.3	75.65	23 34.2
21	21 37 44.81	+16.703	−16 22 49.4	+79.09	23 36.9
22	21 44 26.28	16.753	15 50 29.9	82.52	23 39.7
23	21 51 8.94	16.803	15 16 48.2	85.96	23 42.5
24	21 57 52.83	16.854	14 41 44.0	89.38	23 45.3
25	22 4 37.94	16.906	14 5 17.7	92.81	23 48.1
26	22 11 24.32	+16.958	−13 27 29.4	+96.21	23 51.0
27	22 18 11.95	17.011	12 48 19.7	99.59	23 53.9
28	22 25 0.86	17.065	12 7 48.9	102.96	23 56.8
29	22 31 51.04	17.120	11 25 57.8	106.29	23 59.9
30	22 38 42.60	17.176	10 42 47.1	109.58	
31	22 45 35.50	+17.232	− 9 58 18.1	+112.82	0 2.7
32	22 52 29.75	+17.288	− 9 12 32.0	+116.01	0 5.6

Day of the Month.	5th.	10th.	15th.	20th.	25th.
	″	″	″	″	″
Semidiameter.	2.7	2.6	2.5	2.5	2.4
Hor. Parallax	7.1	6.8	6.6	6.5	6.4

NOTE.—The sign + indicates north declinations: the sign − indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	22 38 42.60	+17.176	−10 42 47.1	+109.58		1	1 51 48.37	+8.015	+14 23 44.2	+64.27	1 10.6
2	22 45 35.50	17.232	9 58 18.1	112.82	0 2.7	2	1 54 49.03	7.033	14 47 47.1	55.94	1 9.6
3	22 52 29.75	17.288	9 12 32.0	116.01	0 5.6	3	1 57 25.83	6.029	15 8 27.6	47.41	1 8.2
4	22 59 25.34	17.344	8 25 30.3	119.11	0 8.6	4	1 59 38.32	5.010	15 25 41.4	38.72	1 6.5
5	23 6 22.23	17.398	7 37 15.4	122.12	0 11.6	5	2 1 26.22	3.980	15 39 24.9	29.90	1 4.3
6	23 13 20.39	+17.448	− 6 47 49.4	+125.02	0 14.6	6	2 2 49.38	+2.951	+15 49 35.7	+20.99	1 1.8
7	23 20 19.70	17.494	5 57 15.2	127.80	0 17.7	7	2 3 47.94	1.931	15 56 12.0	12.02	0 58.8
8	23 27 20.05	17.534	5 5 36.3	130.41	0 20.8	8	2 4 22.22	+0.929	15 59 12.7	+ 3.05	0 55.4
9	23 34 21.28	17.566	4 12 57.2	132.82	0 23.9	9	2 4 32.75	−0.045	15 58 38.7	− 5.88	0 51.6
10	23 41 23.15	17.587	3 19 22.6	135.02	0 27.0	10	2 4 20.38	0.978	15 54 31.6	14.68	0 47.5
11	23 48 25.33	+17.593	− 2 24 58.3	+136.96	0 30.0	11	2 3 46.24	−1.857	+15 46 55.4	−23.28	0 43.0
12	23 55 27.45	17.581	1 29 51.0	138.59	0 33.1	12	2 2 51.74	2.673	15 35 56.2	31.60	0 38.1
13	0 2 29.05	17.548	− 0 34 8.5	139.88	0 36.2	13	2 1 38.55	3.412	15 21 42.0	39.50	0 33.0
14	0 9 29.52	17.487	+ 0 22 0.2	140.78	0 39.3	14	2 0 8.68	4.063	15 4 24.1	46.90	0 27.6
15	0 16 28.19	17.396	1 18 25.2	141.24	0 42.3	15	1 58 24.32	4.616	14 44 15.8	53.67	0 21.9
16	0 23 24.24	+17.269	+ 2 14 55.3	+141.20	0 45.3	16	1 56 27.95	−5.063	+14 21 33.8	−59.69	0 16.0
17	0 30 16.76	17.101	3 11 18.5	140.64	0 48.3	17	1 54 22.21	5.396	13 56 37.4	64.85	0 10.0
18	0 37 4.70	16.886	4 7 21.5	139.50	0 51.2	18	1 52 9.85	5.614	13 29 48.5	69.08	0 3.9 23 57.7
19	0 43 46.89	16.631	5 2 49.9	137.76	0 53.9	19	1 49 53.65	5.716	13 1 30.2	72.28	23 51.5
20	0 50 22.07	16.301	5 57 29.2	135.41	0 56.5	20	1 47 36.41	5.702	12 32 7.8	74.41	23 45.3
21	0 56 48.89	+15.924	+ 6 51 4.2	+132.41	0 59.1	21	1 45 20.85	−5.577	+12 2 7.5	−75.43	23 39.2
22	1 3 5.94	15.487	7 43 19.8	128.78	1 1.4	22	1 43 9.54	5.348	11 31 55.5	75.38	23 33.2
23	1 9 11.76	14.988	8 34 0.7	124.52	1 3.5	23	1 41 4.89	5.094	11 1 57.3	74.29	23 27.3
24	1 15 4.87	14.428	9 22 52.1	119.67	1 5.5	24	1 39 9.05	4.616	10 32 37.4	72.22	23 21.7
25	1 20 43.80	13.807	10 9 40.2	114.25	1 7.2	25	1 37 23.90	4.135	10 4 18.1	69.25	23 16.2
26	1 26 7.12	+13.128	+10 54 12.0	+108.31	1 8.6	26	1 35 51.09	− 3.591	+ 9 37 20.1	−65.48	23 11.0
27	1 31 13.48	12.393	11 36 15.3	101.89	1 9.8	27	1 34 31.95	2.997	9 12 1.4	61.01	23 6.0
28	1 36 1.55	11.606	12 15 39.4	95.06	1 10.6	28	1 33 27.54	2.365	8 48 37.1	55.96	23 1.2
29	1 40 30.14	10.769	12 52 14.3	87.84	1 11.1	29	1 32 38.66	1.704	8 27 19.9	50.44	22 56.7
30	1 44 38.12	9.869	13 25 51.8	80.25	1 11.3	30	1 32 5.88	1.025	8 8 19.5	44.57	22 52.5
31	1 48 24.50	+ 8.969	+13 56 23.9	+ 72.38	1 11.1	31	1 31 49.56	−0.337	+ 7 51 43.3	−38.44	22 48.6
32	1 51 48.37	+ 8.015	+14 23 44.2	+ 64.27	1 10.6	32	1 31 49.77	+0.354	+ 7 37 36.3	−32.14	22 44.9

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
	″	″	″	″	″	″	″
Semidiameter . .	2.4	2.5	2.5	2.7	2.9	3.3	3.8
Hor Parallax . .	6.4	6.5	6.7	7.1	7.7	8.7	9.9

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″
Semidiameter . .	4.4	5.0	5.5	5.9	5.8	5.6
Hor. Parallax . .	11.5	13.2	14.7	15.5	15.5	14.7

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	1 31 49.56	− 0.337	+ 7 51 43.3	−38.44	22 48.6	1	3 18 20.90	+16.203	+16 2 38.9	+85.29	22 39.1
2	1 31 49.77	+ 0.354	7 37 36.3	32.14	22 44.9	2	3 24 55.83	16.709	16 36 51.3	85.70	22 42.0
3	1 32 6.57	1.047	7 26 1.8	25.76	22 41.5	3	3 31 43.00	17.224	17 11 10.0	85.80	22 45.0
4	1 32 39.98	1.736	7 17 0.7	19.36	22 38.4	4	3 38 42.65	17.748	17 45 26.9	85.56	22 48.3
5	1 33 29.79	2.411	7 10 32.8	13.00	22 35.5	5	3 45 54.93	18.279	18 19 33.9	84.96	22 51.7
6	1 34 35.56	+ 3.069	+ 7 6 36.5	− 6.72	22 32.9	6	3 53 20.02	+18.813	+18 53 21.8	+83.98	22 55.4
7	1 35 56.88	3.709	7 5 9.3	− 0.58	22 30.6	7	4 0 57.98	19.350	19 26 41.5	82.59	22 59.3
8	1 37 33.41	4.333	7 6 8.0	+ 5.43	22 28.5	8	4 8 48.81	19.886	19 59 22.5	80.76	23 3.5
9	1 39 24.74	4.941	7 9 28.8	11.26	22 26.6	9	4 16 52.47	20.417	20 31 14.2	78.47	23 7.8
10	1 41 30.44	5.531	7 15 6.9	16.88	22 25.0	10	4 25 8.73	20.936	21 2 5.2	75.70	23 12.3
11	1 43 50.08	+ 6.103	+ 7 22 57.1	+22.28	22 23.6	11	4 33 37.29	+21.440	+21 31 43.8	+72.44	23 17.1
12	1 46 23.24	6.658	7 32 54.4	27.47	22 22.4	12	4 42 17.66	21.920	21 59 57.9	68.66	23 22.0
13	1 49 9.51	7.196	7 44 53.8	32.44	22 21.5	13	4 51 9.20	22.370	22 26 35.2	64.36	23 27.1
14	1 52 8.51	7.719	7 58 49.9	37.19	22 20.7	14	5 0 11.09	22.781	22 51 23.4	59.57	23 32.4
15	1 55 19.91	8.228	8 14 37.2	41.72	22 20.1	15	5 9 22.34	23.148	23 14 10.7	54.30	23 37.8
16	1 58 43.37	+ 8.725	+ 8 32 10.6	+46.05	22 19.7	16	5 18 41.78	+23.462	+23 34 46.2	+48.58	23 43.3
17	2 2 18.60	9.210	8 51 24.8	50.11	22 19.5	17	5 28 8.07	23.718	23 52 59.6	42.47	23 48.9
18	2 6 5.36	9.685	9 12 14.2	53.98	22 19.6	18	5 37 39.74	23.910	24 8 41.9	36.01	23 54.6
19	2 10 3.44	10.153	9 34 33.9	57.63	22 19.8	19	5 47 15.21	24.035	24 21 45.7	29.27	
20	2 14 12.67	10.615	9 58 18.7	61.07	22 20 2	20	5 56 52.88	24.092	24 32 5.3	22.34	0 0.3
21	2 18 32.92	+11.072	+10 23 23.4	+64.29	22 20.7	21	6 6 31.07	+24.079	+24 39 36.9	+15.28	0 6.0
22	2 23 4.07	11.525	10 49 42.9	67.30	22 21.5	22	6 16 8.14	23.999	24 44 18.5	8.18	0 11.7
23	2 27 46.09	11.977	11 17 12.3	70.11	22 22.4	23	6 25 42.52	23.855	24 46 10.0	+ 1.19	0 17.3
24	2 32 38.95	12.428	11 45 46.5	72.70	22 23.5	24	6 35 12.73	23.652	24 45 13.2	− 5.84	0 22.9
25	2 37 42.64	12.881	12 15 20.3	75.06	22 24.8	25	6 44 37.41	23.395	24 41 31.1	12.63	0 28.4
26	2 42 57.24	+13.337	+12 45 48.6	+77.25	22 26.3	26	6 53 55.31	+23.090	+24 35 8.7	−19.20	0 33.8
27	2 48 22.85	13 798	13 17 6.3	79.19	22 27.9	27	7 3 5.40	22.744	24 26 11.3	25.58	0 39.0
28	2 53 59.58	14.264	13 49 7.9	80.91	22 29.8	28	7 12 6.72	22.362	24 14 45.9	31.54	0 44.1
29	2 59 47.56	14.736	14 21 47.9	82.39	22 31.8	29	7 20 58.52	21.951	24 0 59.8	37.25	0 49.0
30	3 5 46.97	15.216	14 55 0.5	83.62	22 34.0	30	7 29 40.16	21.516	23 45 0.5	42.62	0 53.8
31	3 11 58.01	+15.705	+15 28 39.7	+84.60	22 36.5	31	7 38 11.16	+21.064	+23 26 56.6	−47.65	0 58.4
32	3 18 20.90	+16.203	+16 2 38.9	+85.29	22 39.1	32	7 46 31.13	+20.599	+23 6 56.1	−52.34	1 2.8

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.	Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . .	5.″1	4.″7	4.″2	3.″8	3.″5	3.″2	Semidiameter . .	2.″9	2.″7	2.″6	2.″5	2.″5	2.″6
Hor. Parallax . .	13.6	12.4	11.2	10.1	9.2	8.4	Hor. Parallax . .	7.7	7.2	6.9	6.7	6.7	6.9

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

	JULY.						AUGUST.				
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	7 38 11.16	+21.064	+23 26 56.6	−47.65	0 58.4	1	10 30 30.39	+6.680	+7 20 22.2	−71.33	1 48.2
2	7 46 31.13	20.599	23 6 56.1	52.34	1 2.8	2	10 33 4.04	6.124	6 52 24.5	68.43	1 46.8
3	7 54 39.83	20.125	22 45 7.2	56.68	1 7.0	3	10 35 24.14	5.547	6 25 39.8	65.24	1 45.2
4	8 2 37.07	19.645	22 21 38.1	60.69	1 11.0	4	10 37 30.11	4.948	6 0 15.3	61.75	1 43.3
5	8 10 22.76	19.162	21 56 36.8	64.37	1 14.8	5	10 39 21.44	4.325	5 36 18.5	57.93	1 41.2
6	8 17 56.83	+18.678	+21 30 11.0	−67.73	1 18.4	6	10 40 57.50	+3.677	+5 13 57.4	−53.77	1 38.9
7	8 25 19.31	18.196	21 2 28.3	70.78	1 21.8	7	10 42 17.72	3.004	4 53 20.4	49.25	1 36.2
8	8 32 30.27	17.718	20 33 35.8	73.54	1 25.1	8	10 43 21.47	2.305	4 34 36.3	44.36	1 33.3
9	8 39 29.79	17.243	20 3 40.6	76.02	1 28.1	9	10 44 8.15	1.580	4 17 54.3	39.08	1 30.2
10	8 46 17.97	16.773	19 32 49.2	78.23	1 31.0	10	10 44 37.14	0.832	4 3 23.8	33.40	1 26.7
11	8 52 54.91	+16.308	+19 1 7.8	−80.18	1 33.7	11	10 44 47.89	+0.062	+3 51 14.2	−27.32	1 22.9
12	8 59 20.78	15.849	18 28 42.8	81.87	1 36.1	12	10 44 39.94	−0.728	3 41 35.5	20.84	1 18.8
13	9 5 35.69	15.394	17 55 39.9	83.33	1 38.4	13	10 44 12.86	1.531	3 34 36.8	13.98	1 14.4
14	9 11 39.75	14.945	17 22 4.8	84.56	1 40.6	14	10 43 26.42	2.340	3 30 27.2	− 6.75	1 9.7
15	9 17 33.09	14.501	16 48 2.8	85.57	1 42.5	15	10 42 20.54	3.150	3 29 15.4	+ 0.81	1 4.7
16	9 23 15.82	+14.060	+16 13 39.1	−86.37	1 44.2	16	10 40 55.34	−3.947	+3 31 8.2	+ 8.64	0 59.3
17	9 28 48.01	13.623	15 38 58.7	86.96	1 45.8	17	10 39 11.30	4.719	3 36 11.4	16,65	0 53.7
18	9 34 9.75	13.188	15 4 6.7	87.34	1 47.3	18	10 37 9.14	5.453	3 44 28.3	24.76	0 47.7
19	9 39 21.07	12.756	14 29 7.8	87.53	1 48.5	19	10 34 50.00	6.132	3 55 59.7	32.85	0 41.5
20	9 44 22.02	12.323	13 54 6.8	87.52	1 49 5	20	10 32 15.41	6 737	4 10 43.5	40.76	0 35.0
21	9 49 12.56	+11.889	+13 19 8.5	−87.32	1 50.4	21	10 29 27.37	−7.249	+4 28 33.4	+48.33	0 28.2
22	9 53 52.68	11.454	12 44 17.4	86.92	1 51.1	22	10 26 28.33	7.650	4 49 19.3	55.39	0 21.3
23	9 58 22.33	11.016	12 9 38.2	86.32	1 51.7	23	10 23 21.20	7.920	5 12 46.4	61.74	0 14.3
24	10 2 41.40	10.573	11 35 15.7	85.52	1 52.0	24	10 20 9.34	8.044	5 38 36.0	67.24	0 7.2
25	10 6 49.78	10.124	11 1 14.8	84.52	1 52.2	25	10 16 56.36	8.009	6 6 25.4	71.67	0 0.1 23 53.0
26	10 10 47.30	+ 9.668	+10 27 40.2	−83.32	1 52.2	26	10 13 46.28	−7.802	+6 35 46.8	+74.92	23 46.1
27	10 14 33.76	9.202	9 54 37.2	81.90	1 52.0	27	10 10 43.24	7.422	7 6 11.2	76.88	23 39.3
28	10 18 8.92	8.726	9 22 10.7	80.26	1 51.7	28	10 7 51.41	6.868	7 37 6.4	77 49	23 32.7
29	10 21 32.49	8.237	8 50 26.2	78.40	1 51.1	29	10 5 14.89	6.147	8 7 59.6	76.71	23 26.5
30	10 24 44.18	7.734	8 19 29.4	76.30	1 50.3	30	10 2 57.58	5.270	8 38 17.6	74.56	23 20.7
31	10 27 43.61	+ 7.216	+ 7 49 26.0	−73.94	1 49.3	31	10 1 3.05	−4.252	+9 7 28.3	+71.12	23 15.3
32	10 30 30.39	+ 6.680	+ 7 20 22.2	−71.33	1 48.2	32	9 59 34.44	−3.113	+9 35 1.6	+66.47	23 10.3

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.	Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter . .	2″.7	2″.9	3″.1	3″.3	3″.5	3″.8	Semidiameter . .	4″.2	4″.6	4″.9	5″.3	5″.4	5″.2
Hor. Parallax . .	7.2	7.6	8.1	8.6	9.3	10.1	Hor. Parallax . .	11.0	12.1	13.1	14.0	14.3	13.7

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

Day of Month.	SEPTEMBER. Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	OCTOBER. Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	9 59 34.44	− 3.113	+ 9 35 1.6	+66.47	23 10.3	1	12 15 32.23	+16.945	+ 0 5 49.4	+115.93	23 35.3
2	9 58 34.42	1.875	10 0 29.9	60.71	23 5.9	2	12 22 0.95	16.148	− 0 40 35.3	116.09	23 37.8
3	9 58 5.05	− 0.561	10 23 28.0	53.98	23 2.0	3	12 28 27.33	16.050	1 27 1.0	116.01	23 40.3
4	9 58 7.92	+ 0.806	10 43 34.4	46.42	22 58.7	4	12 34 51.35	15.952	2 13 22.2	115.73	23 42.7
5	9 58 43.99	2.203	11 0 30.6	38.15	22 55.9	5	12 41 13.05	15.856	2 59 34.4	115.26	23 45.1
6	9 59 53.71	+ 3.606	+11 14 1.3	+29.32	22 53.6	6	12 47 32.48	+15.763	− 3 45 33.4	−114.63	23 47.4
7	10 1 36.95	4.994	11 23 54.8	20.07	22 51.9	7	12 53 49.72	15.674	4 31 15.5	113.86	23 49.7
8	10 3 53.13	6.347	11 30 2.2	10.51	22 50.8	8	13 0 4.88	15.590	5 16 37.6	112.96	23 52.0
9	10 6 41.20	7.649	11 32 17.9	+ 0.78	22 50.1	9	13 6 18.08	15.512	6 1 36.5	111.94	23 54.3
10	10 9 59.75	8.884	11 30 38.4	− 9.05	22 49.9	10	13 12 29.46	15.439	6 46 9.7	110.82	23 56.5
11	10 13 47.00	+10.039	+11 25 4.2	−18.79	22 50.2	11	13 18 39.17	+15.372	− 7 30 14.8	−109.60	23 58.7
12	10 18 0.92	11.105	11 15 37.8	28.38	22 50.9	12	13 24 47.35	15.311	8 13 49.6	108.29	
13	10 22 39.26	12.073	11 2 23.9	37.72	22 51.9	13	13 30 54.13	15.256	8 56 52.1	106.90	0 0.9
14	10 27 39.62	12.939	10 45 30.3	46.69	22 53.3	14	13 36 59.68	15.208	9 39 20.4	105.44	0 3.0
15	10 32 59.51	13.702	10 25 6.3	55 23	22 55.0	15	13 43 4.15	15.166	10 21 12.9	103.92	0 5.2
16	10 38 36.48	+14.361	+10 1 23.3	−63.26	22 56.9	16	13 49 7.68	+15.130	−11 2 27.9	−102.33	0 7.3
17	10 44 28.05	14.920	9 34 34.4	70.72	22 59.0	17	13 55 10.42	15.100	11 43 4.1	100.67	0 9.4
18	10 50 31.87	15.385	9 4 53.4	77.59	23 1.3	18	14 1 12.51	15.075	12 22 59.7	98.96	0 11.5
19	10 56 45.75	15.759	8 32 34.9	83.84	23 3.7	19	14 7 14.07	15.056	13 2 13.6	97.19	0 13.6
20	11 3 7.65	16.053	7 57 54.4	89.43	23 6.2	20	14 13 15.22	15.042	13 40 44.6	95.37	0 15.6
21	11 9 35.72	+16.275	+ 7 21 7.1	−94.40	23 8.8	21	14 19 16.09	+15.032	−14 18 31.1	− 93.49	0 17.7
22	11 16 8.32	16.432	6 42 28.0	98.76	23 11.5	22	14 25 16.78	15.027	14 55 31.9	91.56	0 19.8
23	11 22 44.03	16.535	6 2 11.4	102.53	23 14.2	23	14 31 17.40	15.026	15 31 45.8	89.59	0 21.9
24	11 29 21.63	16.592	5 20 31.1	105.74	23 16.9	24	14 37 18.03	15.028	16 7 11.7	87.56	0 23.9
25	11 36 0.11	16.609	4 37 40.0	108.43	23 19.6	25	14 43 18.75	15.033	16 41 48.1	85.47	0 26.0
26	11 42 38.61	+16.595	+3 53 50.1	−110.65	23 22.3	26	14 49 19.63	+15.041	−17 15 34.0	− 83.34	0 28.1
27	11 49 16.45	16.555	3 9 12.2	112.43	23 24.9	27	14 55 20.73	15.051	17 48 28.0	81.15	0 30.2
28	11 55 53.09	16.496	2 23 56.6	113.81	23 27.6	28	15 1 22.09	15.062	18 20 28.9	78.91	0 32.2
29	12 2 28.12	16.422	1 38 12.3	114.83	23 30.2	29	15 7 23.73	15.074	18 51 35.3	76.61	0 34.3
30	12 9 1.24	16.337	0 52 7.4	115.52	23 32.8	30	15 13 25.66	15.087	19 21 46.0	74.26	0 36.4
31	12 15 32.23	+16.945	+0 5 49.4	−115.93	23 35.3	31	15 19 27.90	+15.099	−19 50 59.6	− 71.86	0 38.5
32	12 22 0.95	+16.148	−0 40 35.3	−116.09	23 37.8	32	15 25 30.39	+15.109	−20 19 14.9	− 69.40	0 40.6

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter . . .	4″.7	4″.0	3″.5	3″.0	2″.7	2″.5	Semidiameter	2″.4	2″.4	2″.3	2″.3	2″.4	2″.4
Hor. Parallax . . .	12.4	10.7	9.2	8.0	7.3	6.8	Hor. Parallax	6.5	6.3	6.2	6.2	6.3	6.4

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	15 25 30.39	+15.109	−20 19 14.9	−69.40	0 40.6	1	17 54 1.00	+1.804	−24 52 46.9	+31.16	1 10.6
2	15 31 33.10	15.116	20 46 30.3	66.88	0 42.7	2	17 54 22.96	+0.003	24 39 33.3	34.98	1 7.0
3	15 37 35.95	15.121	21 12 44.5	64.30	0 44.8	3	17 54 0.20	−1.919	24 24 48.2	38.79	1 2.7
4	15 43 38.86	15.121	21 37 56.0	61.65	0 46.9	4	17 52 50.16	3.928	24 8 31.7	42.59	0 57.5
5	15 49 41.72	15.116	22 2 3.4	58.94	0 49.1	5	17 50 51.35	5.975	23 50 44.6	46.33	0 51.6
6	15 55 44.36	+15.103	−22 25 5.1	−56.16	0 51.2	6	17 48 3.64	−7.991	−23 31 29.1	+49 93	0 44.9
7	16 1 46.58	15.081	22 46 59.7	53.36	0 53.3	7	17 44 28.70	9.895	23 10 50.0	53.27	0 37.4
8	16 7 48.15	15.048	23 7 45.5	50.45	0 55.4	8	17 40 10.32	11.593	22 48 55.9	56.15	0 29.2
9	16 13 48.81	15.004	23 27 20.8	47.48	0 57.4	9	17 35 14.66	12.986	22 26 0.3	58.36	0 20.4
10	16 19 48.22	14.945	23 45 44.2	44.45	0 59.5	10	17 29 50.07	13.989	22 2 23.8	59.55	0 11.1
11	16 25 46.01	+14.868	−24 2 54.0	−41.35	1 1.5	11	17 24 6.82	−14.533	−21 38 33.2	+59.45	0 1.5 23 51.8
12	16 31 41.73	14.771	24 18 48.5	38.18	1 3.5	12	17 18 16.38	14.585	21 15 1.4	57.93	23 42.1
13	16 37 34.87	14.652	24 33 26.1	34.94	1 5.4	13	17 12 30.58	14.149	20 52 24.9	54.85	23 32.7
14	16 43 24.83	14.507	24 46 45.1	31.64	1 7.3	14	17 7 0.76	13.266	20 31 21.0	50.22	23 23.8
15	16 49 10.93	14.331	24 58 44.2	28.27	1 9.1	15	17 1 56.83	12.004	20 12 25.5	44.21	23 15.4
16	16 54 52.40	+14.119	−25 9 21.5	−24.83	1 10.9	16	16 57 26.86	−10.452	−19 56 7.1	+37.19	23 7.6
17	17 0 28.31	13.867	25 18 35.7	21.34	1 12.5	17	16 53 36.65	8.708	19 42 46.0	29.46	23 0.5
18	17 5 57.67	13.571	25 26 25.2	17.78	1 14.1	18	16 50 29.79	6.855	19 32 35.8	21.38	22 54.2
19	17 11 19.30	13.222	25 32 48.7	14.17	1 15.5	19	16 48 7.86	4.972	19 25 39.7	13.33	22 48.7
20	17 16 31.87	12.815	25 37 45.1	10.52	1 16.8	20	16 46 30.92	3.117	19 21 53.6	+ 5.59	22 43.8
21	17 21 33.89	+12.340	−25 41 13.3	− 6.82	1 17.8	21	16 45 37.68	− 1.336	−19 21 7.4	− 1.63	22 39.6
22	17 26 23.61	11.790	25 43 12.2	− 3.08	1 18.7	22	16 45 25.98	+ 0.343	19 23 6.7	8.19	22 36.1
23	17 30 59.15	11.156	25 43 40.9	+ 0.69	1 19.4	23	16 45 53.20	1.904	19 27 34.4	13.98	22 33.2
24	17 35 18.35	10.427	25 42 38.9	4.48	1 19.8	24	16 46 56.36	3.338	19 34 11.8	19.00	22 30.8
25	17 39 18.80	9.592	25 40 5.9	8.28	1 19.8	25	16 48 32.44	4.647	19 42 40.1	23.23	22 29.0
26	17 42 57.82	+ 8.639	−25 36 1.6	+12.09	1 19.4	26	16 50 38.43	+ 5.833	−19 52 40.7	−26.70	22 27.6
27	17 46 12.46	7.559	25 30 25.6	15.91	1 18.7	27	16 53 11.51	6.905	20 3 56.0	29.46	22 26.6
28	17 48 59.56	6.344	25 23 18.1	19.71	1 17.5	28	16 56 9.01	7.870	20 16 9.5	31.56	22 25.9
29	17 51 15.78	4.981	25 14 39.1	23.52	1 15.8	29	16 59 28.49	8.738	20 29 6.1	33.06	22 25.6
30	17 52 57.46	3.467	25 4 28.8	27.34	1 13.5	30	17 3 7.74	9.519	20 42 32.3	34.02	22 25.6
31	17 54 1.00	+1.804	−24 52 46.9	+31.16	1 10.6	31	17 7 4.78	+10.222	−20 56 15.4	−34.50	22 25.8
32	17 54 22.96	+0.003	−24 39 33.3	+34.98	1 7.0	32	17 11 17.82	+10.854	−21 10 4.8	−34.54	22 26.3

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter . .	2″.5	2″.6	2″.7	2″.9	3″.2	3″.5
Hor. Parallax . .	6.6	6.8	7.2	7.7	8.4	9.4

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	4″.0	4″.6	4″.9	4″.7	4″.2	3″.7	3″.3
Hor Parallax . .	10.7	12.2	13.0	12.6	11.2	9.9	8.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	20 36 41.88	+12.855	−20 19 4.4	+45.86	1 54.3	1	23 5 31.19	+11.265	−7 13 52.3	+75.59	2 20.9
2	20 41 49.72	12.799	20 0 26.7	47.29	1 55.5	2	23 10 1.13	11.230	6 43 32.8	76.03	2 21.5
3	20 46 56.22	12.742	19 41 14.8	48.70	1 56.7	3	23 14 30.24	11.196	6 13 3.2	76.44	2 22.0
4	20 52 1.35	12.685	19 21 29.4	50.08	1 57.9	4	23 18 58.57	11.164	5 42 24.2	76.81	2 22.5
5	20 57 5.10	12.627	19 1 11.2	51.43	1 59.0	5	23 23 26.14	11.133	5 11 36.6	77.15	2 23.0
6	21 2 7.46	+12.569	−18 40 21.0	+52.75	2 0.1	6	23 27 52.99	+11.104	−4 40 41.3	+77.46	2 23.5
7	21 7 8.43	12.511	18 18 59.5	54.04	2 1.2	7	23 32 19.16	11.076	4 9 38.9	77.74	2 24.0
8	21 12 8.00	12.453	17 57 7.5	55.29	2 2.2	8	23 36 44.67	11.050	3 38 30.3	77.98	2 24.5
9	21 17 6.16	12.394	17 34 45.8	56.51	2 3.2	9	23 41 9.58	11.026	3 7 16.2	78.20	2 25.0
10	21 22 2.93	12.336	17 11 55.2	57.70	2 4.2	10	23 45 33.92	11.003	2 35 57.3	78.38	2 25.5
11	21 26 58.31	+12.278	−16 48 36.5	+58.86	2 5.2	11	23 49 57.73	+10.982	−2 4 34.4	+78.53	2 25.9
12	21 31 52.30	12.221	16 24 50.4	59.98	2 6.1	12	23 54 21.05	10.962	1 33 8.1	78.65	2 26.4
13	21 36 44.91	12.164	16 0 37.8	61.07	2 7.0	13	23 58 43.92	10.944	1 1 39.3	78.74	2 26.8
14	21 41 36.17	12.108	15 35 59.4	62.13	2 7.9	14	0 3 6.37	10.928	−0 30 8.6	78.80	2 27.3
15	21 46 26.08	12.052	15 10 56.0	63.15	2 8.8	15	0 7 28.45	10.913	+0 1 23.2	78.83	2 27.7
16	21 51 14.66	+11.997	−14 45 28.4	+64.14	2 9.7	16	0 11 50.19	+10.900	+0 32 55.5	+78.84	2 28.1
17	21 56 1.93	11.943	14 19 37.4	65.10	2 10.6	17	0 16 11.65	10.889	1 4 27.5	78.81	2 28.5
18	22 0 47.92	11.890	13 53 23.8	66.03	2 11.4	18	0 20 32.86	10.879	1 35 58.6	78.76	2 28.9
19	22 5 32.64	11.837	13 26 48.3	66.92	2 12.2	19	0 24 53.87	10.871	2 7 28.0	78.68	2 29.3
20	22 10 16.12	11.786	12 59 51.7	67.79	2 13.0	20	0 29 14.70	10.865	2 38 55.1	78.57	2 29.7
21	22 14 58.38	+11.736	−12 32 34.8	+68.62	2 13.8	21	0 33 35.40	+10.860	+3 10 19.1	+78.43	2 30.1
22	22 19 39.46	11.686	12 4 58.4	69.42	2 14.5	22	0 37 56.00	10.857	3 41 39.4	78.26	2 30.5
23	22 24 19.37	11.639	11 37 3.2	70.18	2 15.2	23	0 42 16.55	10.855	4 12 55.2	78.06	2 30.9
24	22 28 58.15	11.592	11 8 50.1	70.91	2 15.9	24	0 46 37.07	10.855	4 44 5.8	77.83	2 31.3
25	22 33 35.82	11.547	10 40 19.8	71.61	2 16.6	25	0 50 57.60	10.856	5 15 10.5	77.57	2 31.7
26	22 38 12.43	+11.503	−10 11 33.1	+72.28	2 17.3	26	0 55 18.18	+10.859	+5 46 8.7	+77.28	2 32.1
27	22 42 48.00	11.460	9 42 30.7	72.91	2 18.0	27	0 59 38.84	10.863	6 16 59.6	76.96	2 32.5
28	22 47 22.55	11.418	9 13 13.5	73.51	2 18.6	28	1 3 59.60	10.868	6 47 42.5	76.61	2 32.9
29	22 51 56.11	11.378	8 43 42.3	74.08	2 19.2	29	1 8 20.51	10.875	7 18 16.7	76.23	2 33.3
30	22 56 28.72	11.339	8 13 57.8	74.62	2 19.8	30	1 12 41.58	10.882	7 48 41.4	75.82	2 33.7
31	23 1 0.40	+11.301	− 7 44 0.9	+75.12	2 20.4	31	1 17 2.85	+10.891	+8 18 55.9	+75.38	2 34.1
32	23 5 31.19	+11.265	− 7 13 52.3	+75.59	2 20.9	32	1 21 24.33	+10.900	+8 48 59.5	+74.91	2 34.5

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.	5th.	10th.	15th.	20th.	25th.
	″	″	″	″	″	″	″		″	″	″	″	″
Semidiameter . .	5.8	5.9	6.0	6.1	6.2	6.3	6.4	Semidiameter.	6.6	6.7	6.9	7.0	7.2
Hor. Parallax . .	6.0	6.1	6.2	6.3	6.4	6.5	6.7	Hor. Parallax	6.8	6.9	7.1	7.3	7.5

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	1 12 41.58	+10.882	+ 7 48 41.4	+75.82	2 33.7
2	1 17 2.85	10.891	8 18 55.9	75.38	2 34.1
3	1 21 24.33	10.900	8 48 59.5	74.91	2 34.5
4	1 25 46.06	10.911	9 18 51.5	74.41	2 35.0
5	1 30 8.06	10.922	9 48 31.1	73.88	2 35.4
6	1 34 30.34	+10.935	+10 17 57.7	+73.33	2 35.8
7	1 38 52.94	10.948	10 47 10.5	72.74	2 36.3
8	1 43 15.88	10.963	11 16 8.8	72.12	2 36.7
9	1 47 39.19	10.978	11 44 52.0	71.47	2 37.2
10	1 52 2.88	10.994	12 13 19.3	70.79	2 37.6
11	1 56 26.97	+11.011	+12 41 29.9	+70.09	2 38.1
12	2 0 51.47	11.029	13 9 23.4	69.36	2 38.5
13	2 5 16.41	11.048	13 36 59.0	68.60	2 39.0
14	2 9 41.81	11.068	14 4 15.9	67.81	2 39.5
15	2 14 7.68	11.088	14 31 13.8	67.00	2 40.0
16	2 18 34.03	+11.109	+14 57 51.8	+66.16	2 40.5
17	2 23 0.88	11.130	15 24 9.2	65.29	2 41.0
18	2 27 28.25	11.151	15 50 5.5	64.40	2 41.5
19	2 31 56.14	11.173	16 15 40.0	63.48	2 42.0
20	2 36 24.55	11.195	16 40 52.2	62.53	2 42.6
21	2 40 53.50	+11.217	+17 5 41.4	+61.56	2 43.1
22	2 45 22.98	11.239	17 30 6.9	60.56	2 43.7
23	2 49 52.99	11.261	17 54 8.1	59.54	2 44.2
24	2 54 23.53	11.283	18 17 44.5	58.49	2 44.8
25	2 58 54.60	11.305	18 40 55.3	57.41	2 45.3
26	3 3 26.19	+11.326	+19 3 40.1	+56.31	2 45.9
27	3 7 58.28	11.347	19 25 58.2	55.19	2 46.5
28	3 12 30.85	11.367	19 47 49.0	54.04	2 47.1
29	3 17 3.89	11.386	20 9 11.9	52.87	2 47.7
30	3 21 37.38	11.404	20 30 6.5	51.68	2 48.3
31	3 26 11.29	+11.421	+20 50 32.1	+50.46	2 48.9
32	3 30 45.59	+11.437	+21 10 28.2	+49.22	2 49.6

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th	31st.
	″	″	″	″	″	″	″
Semidiameter . .	7.4	7.6	7.9	8.1	8.4	8.7	9.0
Hor. Parallax . .	7.7	7.9	8.1	8.4	8.7	9.0	9.4

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	3 30 45.59	+11.437	+21 10 28.2	+49.22	2 49.6
2	3 35 20.24	11.451	21 29 54.1	47.95	2 50.2
3	3 39 55.21	11.463	21 48 49.4	46.66	2 50.9
4	3 44 30.45	11.474	22 7 13.5	45.35	2 51.5
5	3 49 5.92	11.483	22 25 6.1	44.02	2 52.2
6	3 53 41.59	+11.490	+22 42 26.6	+42.68	2 52.8
7	3 58 17.40	11.495	22 59 14.6	41.32	2 53.5
8	4 2 53.31	11.498	23 15 29.7	39.94	2 54.1
9	4 7 29.27	11.499	23 31 11.5	38.55	2 54.8
10	4 12 5.23	11.497	23 46 19.6	37.14	2 55.4
11	4 16 41.13	+11.493	+24 0 53.9	+35.71	2 56.1
12	4 21 16.91	11.487	24 14 54.0	34.28	2 56.7
13	4 25 52.50	11.478	24 28 19.6	32.83	2 57.4
14	4 30 27.84	11.467	24 41 10.3	31.38	2 58.0
15	4 35 2.87	11.453	24 53 26.0	29.92	2 58.7
16	4 39 37.53	+11.436	+25 5 6.4	+28.45	2 59.3
17	4 44 11.76	11.416	25 16 11.4	26.97	3 0.0
18	4 48 45.47	11.393	25 26 40.8	25.48	3 0.6
19	4 53 18.60	11.367	25 36 34.6	24.00	3 1.2
20	4 57 51.06	11.337	25 45 52.6	22.51	3 1.8
21	5 2 22.76	+11.304	+25 54 34.9	+21.02	3 2.4
22	5 6 53.63	11.268	26 2 41.4	19.52	3 3.0
23	5 11 23.57	11.228	26 10 12.1	18.03	3 3.5
24	5 15 52.50	11.183	26 17 6.9	16.54	3 4.0
25	5 20 20.32	11.135	26 23 26.0	15.05	3 4.5
26	5 24 46.92	+11.082	+26 29 9.5	+13.57	3 5.0
27	5 29 12.21	11.025	26 34 17.4	12.09	3 5.5
28	5 33 36.08	10.964	26 38 49.9	10.62	3 6.0
29	5 37 58.43	10.898	26 42 47.2	9.15	3 6.4
30	5 42 19.14	10.827	26 46 9.4	7.70	3 6.8
31	5 46 38.08	+10.751	+26 48 56.9	+ 6.26	3 7.2
32	5 50 55.13	+10.670	+26 51 9.9	+ 4.83	3 7.5

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″
Semidiameter . .	9.4	9.8	10.3	10.8	11.4	12.0
Hor. Parallax .	9.7	10.2	10.6	11.2	11.8	12.4

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	5 46 38.08	+10.751	+26 48 56.9	+ 6.26	3 7.2
2	5 50 55.13	10.670	26 51 9.9	4.83	3 7.5
3	5 55 10.19	10.584	26 52 48.8	3.41	3 7.8
4	5 59 23.12	10.493	26 53 53.8	2.01	3 8.1
5	6 3 33.80	10.397	26 54 25.4	+ 0.63	3 8.3
6	6 7 42.10	+10.295	+26 54 24.0	− 0.74	3 8.5
7	6 11 47.91	10.188	26 53 50.2	2.09	3 8.6
8	6 15 51.09	10.076	26 52 44.3	3.41	3 8.7
9	6 19 51.52	9.959	26 51 7.0	4.71	3 8.8
10	6 23 49.06	9.836	26 48 58.7	5.98	3 8.8
11	6 27 43.59	+ 9.708	+26 46 20.1	− 7.23	3 8.8
12	6 31 34.97	9.574	26 43 11.8	8.45	3 8.7
13	6 35 23.08	9.435	26 39 34.5	9.65	3 8.6
14	6 39 7.78	9.290	26 35 28.8	10.82	3 8.4
15	6 42 48.94	9.140	26 30 55.5	11.95	3 8.1
16	6 46 26.43	+ 8.984	+26 25 55.2	−13.06	3 7.8
17	6 50 0.10	8.822	26 20 28.7	14.14	3 7.4
18	6 53 29.82	8.654	26 14 36.7	15.18	3 6.9
19	6 56 55.44	8.480	26 8 20.2	16.19	3 6.4
20	7 0 16.81	8.300	26 1 39.9	17.16	3 5.8
21	7 3 33.78	+ 8.113	+25 54 36.6	−18.10	3 5.2
22	7 6 46.19	7.920	25 47 11.3	19.00	3 4.5
23	7 9 53.88	7.720	25 39 24.7	19.87	3 3.6
24	7 12 56.68	7.513	25 31 17.8	20.70	3 2.7
25	7 15 54.41	7.298	25 22 51.4	21.49	3 1.7
26	7 18 46.89	+ 7.075	+25 14 6.6	−22.24	3 0.6
27	7 21 33.95	6.845	25 5 4.2	22.95	2 59.4
28	7 24 15.38	6.606	24 55 45.2	23.62	2 58.1
29	7 26 50.98	6.359	24 46 10.7	24.25	2 56.8
30	7 29 20.54	6.103	24 36 21.7	24.84	2 55.4
31	7 31 43.86	+ 5.838	+24 26 19.0	−25.38	2 53.8
32	7 34 0.71	+ 5.564	+24 16 3.9	−25.88	2 52.1

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter . .	12″.7	13″.5	14″.4	15″.4	16″.6	17″.9
Hor. Parallax . .	13.2	14.0	14.9	16.0	17.2	18.6

JUNE.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	7 34 0.71	+5.564	+24 16 3.9	−25.88	2 52.1
2	7 36 10.88	5.281	24 5 37.4	26.33	2 50.3
3	7 38 14.15	4.989	23 55 0.5	26.74	2 48.4
4	7 40 10.28	4.687	23 44 14.4	27.10	2 46.3
5	7 41 59.04	4.376	23 33 20.1	27.42	2 44.1
6	7 43 40.21	+4.055	+23 22 18.6	−27.70	2 41.8
7	7 45 13.57	3.724	23 11 10.9	27.94	2 39.4
8	7 46 38.87	3.384	22 59 58.0	28.13	2 37.0
9	7 47 55.90	3.034	22 48 41.0	28.28	2 34.4
10	7 49 4.42	2.675	22 37 20.9	28.39	2 31.6
11	7 50 4.22	+2.307	+22 25 58.7	−28.45	2 28.6
12	7 50 55.10	1.930	22 14 35.6	28.47	2 25.5
13	7 51 36.84	1.546	22 3 12.4	28.46	2 22.2
14	7 52 9.27	1.154	21 51 50.0	28.41	2 18.8
15	7 52 32.20	0.755	21 40 29.3	28.32	2 15.2
16	7 52 45.47	+0.349	+21 29 11.0	−28.20	2 11.5
17	7 52 48.92	−0.062	21 17 56.0	28.05	2 7.6
18	7 52 42.43	0.478	21 6 45.0	27.87	2 3.4
19	7 52 25.89	0.899	20 55 38.8	27.66	1 59.4
20	7 51 59.25	1.322	20 44 38.1	27.42	1 55.0
21	7 51 22.45	−1.745	+20 33 43.7	−27.15	1 50.4
22	7 50 35.49	2.168	20 22 56.0	26.85	1 45.7
23	7 49 38.40	2.588	20 12 15.9	26.52	1 40.8
24	7 48 31.28	3.004	20 1 43.8	26.17	1 35.8
25	7 47 14.26	3.413	19 51 20.4	25.80	1 30.6
26	7 45 47.55	−3.811	+19 41 6.1	−25.40	1 25.2
27	7 44 11.41	4.197	19 31 1.6	24.98	1 19.7
28	7 42 26.18	4.569	19 21 7.2	24.54	1 14.0
29	7 40 32.25	4.922	19 11 23.7	24.08	1 8.1
30	7 38 30.10	5.253	19 1 51.6	23.59	1 2.0
31	7 36 20.28	−5.560	+18 52 31.6	−23.08	0 55.9
32	7 34 3.43	−5.839	+18 43 24.3	−22.54	0 49.8

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . .	19″.4	21″.0	22″.8	24″.6	26″.4	28″.0
Hor. Parallax . .	20.1	21.7	23.6	25.5	27.3	28.9

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	7 36 20.28	−5.560	+18 52 31.6	−23.08	0 55.9
2	7 34 3.43	5.839	18 43 24.3	22.54	0 49.8
3	7 31 40.27	6.086	18 34 30.3	21.97	0 43.5
4	7 29 11.57	6.300	18 25 50.5	21.36	0 37.1
5	7 26 38.18	6.476	18 17 25.6	20.72	0 30.7
6	7 24 1.00	−6.619	+18 9 16.3	−20.05	0 24.2
7	7 21 20.99	6.712	18 1 23.5	19.34	0 17.7
8	7 18 39.16	6.767	17 53 48.1	18.60	0 11.1
9	7 15 56.55	6.778	17 46 31.0	17.82	0 4.5 23 57.8
10	7 13 14.13	6.748	17 39 33.1	17.00	23 51.2
11	7 10 32.93	−6.676	+17 32 55.4	−16.14	23 44.6
12	7 7 53.98	6.562	17 26 38.8	15.24	23 38.1
13	7 5 18.24	6.408	17 20 44.3	14.31	23 31.6
14	7 2 46.67	6.216	17 15 12.6	13.34	23 25.2
15	7 0 20.13	5.989	17 10 4.3	12.35	23 19.0
16	6 57 59.45	−5.730	+17 5 20.2	−11.33	23 12.9
17	6 55 45.35	5.441	17 1 0.7	10.29	23 6.9
18	6 53 38.52	5.125	16 57 6.4	9.24	23 1.0
19	6 51 39.53	4.786	16 53 37.5	8.18	22 55.2
20	6 49 48.95	4.427	16 50 34.0	7.12	22 49.6
21	6 48 7.18	−4.052	+16 47 55.9	− 6.06	22 44.1
22	6 46 34.59	3.663	16 45 43.0	5.02	22 38.8
23	6 45 11.45	3.264	16 43 56.0	3.99	22 33.6
24	6 43 58.02	2.856	16 42 31.4	2.98	22 28.6
25	6 42 54.42	2.443	16 41 31.5	2.01	22 23.8
26	6 42 0.76	−2.028	+16 40 54.6	− 1.07	22 19.1
27	6 41 17.09	1.611	16 40 39.7	− 0.17	22 14.6
28	6 40 43.44	1.195	16 40 45.9	+ 0.69	22 10.3
29	6 40 19.74	0.781	16 41 12.1	1.49	22 6.1
30	6 40 5.95	−0.370	16 41 57.0	2.24	22 2.1
31	6 40 1.94	+0.035	+16 42 59.3	+ 2.94	21 58.3
32	6 40 7.58	+0.434	+16 44 17.8	+ 3.59	21 54.6

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . .	29″.1	29″.7	29″.1	28″.1	26″.6	24″.8
Hor. Parallax . .	46.9	46.3	46.8	48.4	50.8	53.7

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	6 40 7.58	+0.434	+16 44 17.8	+3.59	21 54.6
2	6 40 22.73	0.827	16 45 51.0	4.17	21 51.0
3	6 40 47.24	1.213	16 47 37.4	4.69	21 47.6
4	6 41 20.92	1.591	16 49 35.4	5.14	21 44.4
5	6 42 3.54	1.959	16 51 43.5	5.53	21 41.3
6	6 42 54.91	+2.319	+16 54 0.2	+5.85	21 38.3
7	6 43 54.82	2 670	16 56 23.8	6.11	21 35.5
8	6 45 3.01	3.011	16 58 52.8	6.30	21 32.8
9	6 46 19.27	3.342	17 1 25.6	6.43	21 30.2
10	6 47 43.36	3.664	17 4 0.8	6.49	21 27.8
11	6 49 15.05	+3.976	+17 6 37.1	+6.49	21 25.5
12	6 50 54.10	4.277	17 9 12.3	6.43	21 23.3
13	6 52 40.25	4.568	17 11 45.1	6.31	21 21.2
14	6 54 33.27	4.848	17 14 14.3	6.12	21 19.3
15	6 56 32.93	5.119	17 16 38.4	5.88	21 17.4
16	6 58 38.98	+5.382	+17 18 56.0	+5.58	21 15.7
17	7 0 51.18	5.634	17 21 5.8	5.23	21 14.0
18	7 3 9.31	5.876	17 23 6.5	4.82	21 12.5
19	7 5 33.16	6.109	17 24 56.8	4.36	21 11.1
20	7 8 2.50	6.334	17 26 35.6	3.86	21 9.7
21	7 10 37.11	+6.549	+17 28 1.9	+3.31	21 8.4
22	7 13 16.80	6.756	17 29 14.5	2.72	21 7.2
23	7 16 1.35	6.955	17 30 12.4	2.09	21 6.1
24	7 18 50.57	7.146	17 30 54.7	1.42	21 5.0
25	7 21 44.30	7.330	17 31 20.3	+0.71	21 4.0
26	7 24 42.34	+7.506	+17 31 28.4	−0.04	21 3.1
27	7 27 44.52	7.675	17 31 18.1	0.82	21 2.3
28	7 30 50.68	7.838	17 30 48.6	1.64	21 1.5
29	7 34 0.67	7.994	17 29 59.0	2.49	21 0.8
30	7 37 14.34	8.144	17 28 48.7	3.37	21 0.1
31	7 40 31.53	+8.288	+17 27 16.9	−4.28	20 59.5
32	7 43 52.11	+8.426	+17 25 23.0	−5.22	20 58.9

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter . .	23″.0	21″.3	19″.7	18″.2	16″.9	15″.8
Hor. Parallax . .	57.0	60.4	63.8	67.1	70.3	73.4

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	7 43 52.11	+ 8.496	+17 25 23.0	− 5.22	20 58.9
2	7 47 15.94	8.559	17 23 6.3	6.18	20 58.4
3	7 50 42.90	8.687	17 20 26.1	7.17	20 57.9
4	7 54 12.86	8.809	17 17 21.9	8.18	20 57.5
5	7 57 45.68	8.926	17 13 53.1	9.22	20 57.1
6	8 1 21.25	+ 9.038	+17 9 59.2	−10.28	20 56.8
7	8 4 59.44	9.145	17 5 39.7	11.35	20 56.5
8	8 8 40.15	9.247	17 0 54.2	12.44	20 56.3
9	8 12 23.26	9.345	16 55 42.3	13.55	20 56.1
10	8 16 8.66	9.438	16 50 3.6	14.67	20 56.0
11	8 19 56.25	+ 9.527	+16 43 57.8	−15.81	20 55.9
12	8 23 45.92	9.611	16 37 24.6	16.96	20 55.8
13	8 27 37.55	9.691	16 30 23.7	18.12	20 55.8
14	8 31 31.04	9.767	16 22 54.9	19.29	20 55.8
15	8 35 26.29	9.838	16 14 58.0	20.46	20 55.8
16	8 39 23.21	+ 9.905	+16 6 32.9	−21.63	20 55.9
17	8 43 21.71	9.969	15 57 39.7	22.81	20 55.9
18	8 47 21.69	10.029	15 48 18.3	23.98	20 56.0
19	8 51 23.06	10.085	15 38 28.6	25.16	20 56.1
20	8 55 25.74	10.138	15 28 10.7	26.33	20 56.2
21	8 59 29.65	+10.187	+15 17 24.5	−27.51	20 56.3
22	9 3 34.70	10.233	15 6 10.1	28.68	20 56.4
23	9 7 40.83	10.277	14 54 27.5	29.85	20 56.6
24	9 11 47.97	10.317	14 42 17.1	31.01	20 56.8
25	9 15 56.05	10.355	14 29 38.9	32.17	20 57.0
26	9 20 5.01	+10.391	+14 16 33.2	−33.32	20 57.2
27	9 24 14.80	10.424	14 3 0.1	34.45	20 57.4
28	9 28 25.36	10.455	13 48 59.7	35.58	20 57.6
29	9 32 36.65	10.485	13 34 32.3	36.70	20 57.9
30	9 36 48.61	10.512	13 19 38.1	37.81	20 58.2
31	9 41 1.21	+10.538	+13 4 17.5	−38.91	20 58.5
32	9 45 14.40	+10.562	+12 48 30.6	−40.00	20 58.8

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter . . .	14″.8	13″.8	13″.0	12″.3	11″.7	11″.1
Hor. Parallax . . .	15.3	14.3	13.5	12.7	12.1	11.5

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	9 41 1.21	+10.538	+13 4 17.5	−38.91	20 58.5
2	9 45 14.40	10.562	12 48 30.6	40.00	20 58.8
3	9 49 28.14	10.584	12 32 17.8	41.07	20 59.1
4	9 53 42.40	10.605	12 15 39.3	42.13	20 59.4
5	9 57 57.15	10.624	11 58 35.5	43.18	20 59.7
6	10 2 12.35	+10.642	+11 41 6.8	−44.21	21 0.0
7	10 6 27.97	10.659	11 23 13.4	45.23	21 0.3
8	10 10 43.99	10.675	11 4 55.8	46.23	21 0.6
9	10 15 0.37	10.690	10 46 14.4	47.22	21 1.0
10	10 19 17.10	10.704	10 27 9.5	48.18	21 1.3
11	10 23 34.14	+10.717	+10 7 41.7	−49.13	21 1.7
12	10 27 51.48	10.729	9 47 51.4	50.05	21 2.1
13	10 32 9.10	10.740	9 27 39.2	50.96	21 2.5
14	10 36 26.97	10.750	9 7 5.5	51.84	21 2.8
15	10 40 45.08	10.760	8 46 10.9	52.70	21 3.2
16	10 45 3.41	+10.769	+ 8 24 55.9	−53.54	21 3.6
17	10 49 21.95	10.777	8 3 21.2	54.35	21 3.9
18	10 53 40.69	10.785	7 41 27.3	55.14	21 4.3
19	10 57 59.62	10.792	7 19 14.7	55.90	21 4.7
20	11 2 18.72	10.800	6 56 44.1	56.64	21 5.0
21	11 6 38.00	+10.807	+ 6 33 56.0	−57.35	21 5.4
22	11 10 57.44	10.814	6 10 51.2	58.04	21 5.8
23	11 15 17.05	10.821	5 47 30.2	58.70	21 6.2
24	11 19 36.84	10.828	5 23 53.7	59.34	21 6.6
25	11 23 56.80	10.836	5 0 2.2	59.95	21 7.0
26	11 28 16.95	+10.844	+ 4 35 56.5	−60.53	21 7.4
27	11 32 37.29	10.852	4 11 37.1	61.09	21 7.8
28	11 36 57.84	10.861	3 47 4.7	61.62	21 8.2
29	11 41 18.60	10.870	3 22 19.9	62.12	21 8.6
30	11 45 39.59	10.879	2 57 23.3	62.60	21 9.0
31	11 50 0.81	+10.889	+ 2 32 15.5	−63.05	21 9.4
32	11 54 22.29	+10.900	+ 2 6 57.2	−63.47	21 9.8

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter	10″.6	10″.1	9″.7	9″.3	9″.0	8″.6
Hor. Parallax	11.0	10.5	10.0	9.6	9.3	8.9

Note.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 54 22.29	+10.900	+ 2 6 57.2	−63.17	21 9.8
2	11 58 44.04	10.912	1 41 29.1	63.87	21 10.3
3	12 3 6.10	10.925	1 15 51.8	64.24	21 10.7
4	12 7 28.48	10.939	0 50 6.1	64.58	21 11.1
5	12 11 51.20	10.954	+ 0 24 12.5	64.89	21 11.5
6	12 16 14.29	+10.970	− 0 1 48.4	−65.18	21 12.0
7	12 20 37.76	10.987	0 27 55.7	65.44	21 12.4
8	12 25 1.63	11.004	0 54 8.8	65.66	21 12.9
9	12 29 25.94	11.022	1 20 27.0	65.85	21 13.3
10	12 33 50.70	11.041	1 46 49.5	66.02	21 13.8
11	12 38 15.91	+11.061	− 2 13 15.6	−66.16	21 14.3
12	12 42 41.62	11.082	2 39 44.6	66.26	21 14.8
13	12 47 7.85	11.104	3 6 15.8	66.33	21 15.3
14	12 51 34.62	11.127	3 32 48.4	66.37	21 15.8
15	12 56 1.95	11.151	3 59 21.6	66.38	21 16.3
16	13 0 29.86	+11.175	− 4 25 54.7	−66.36	21 16.9
17	13 4 58.37	11.201	4 52 26.8	66.31	21 17.4
18	13 9 27.51	11.228	5 18 57.2	66.22	21 18.0
19	13 13 57.31	11.256	5 45 25.1	66.10	21 18.5
20	13 18 27.79	11.284	6 11 49.8	65.95	21 19 1
21	13 22 58.96	+11.314	− 6 38 10.4	−65.76	21 19.7
22	13 27 30.85	11.344	7 4 26.1	65.54	21 20.3
23	13 32 3.49	11.376	7 30 36.2	65.29	21 20.9
24	13 36 36.90	11.408	7 56 39.9	65.01	21 21.6
25	13 41 11.11	11.442	8 22 36.5	64.70	21 22.2
26	13 45 46.16	+11.478	− 8 48 25.2	−64.35	21 22.9
27	13 50 22.06	11.515	9 14 5.2	63.97	21 23.6
28	13 54 58.85	11.552	9 39 35.7	63.56	21 24.3
29	13 59 36.55	11.591	10 4 55.9	63.12	21 25.0
30	14 4 15.17	11.630	10 30 5.2	62.65	21 25.7
31	14 8 54.77	+11.671	−10 55 2.7	−62.14	21 26.4
32	14 13 35.35	+11.712	−11 19 47.6	−61.60	21 27.1

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	14 8 54.77	+11.671	−10 55 2.7	−62.14	21 26.4
2	14 13 35.35	11.712	11 19 47.6	61.60	21 27.1
3	14 18 16.93	11.755	11 44 19.2	61.03	21 27.8
4	14 22 59.55	11.798	12 8 36.6	60.42	21 28.6
5	14 27 43.22	11.843	12 32 39.1	59.78	21 29.4
6	14 32 27.97	+11.888	−12 56 25.9	−59.11	21 30.2
7	14 37 13.83	11.934	13 19 56.3	58.41	21 31.0
8	14 42 0.80	11 981	13 43 9.3	57.67	21 31.9
9	14 46 48.91	12.029	14 6 4.3	56.90	21 32.8
10	14 51 38.17	12.077	14 28 40.4	56.10	21 33.7
11	14 56 28.59	+12.125	−14 50 56.7	−55.25	21 34.6
12	15 1 20.18	12.174	15 12 52.5	54.39	21 35.6
13	15 6 12.94	12.223	15 34 27.0	53.48	21 36.6
14	15 11 6.88	12.272	15 55 39.3	52.54	21 37.6
15	15 16 2.02	12.322	16 16 28.7	51.57	21 38.6
16	15 20 58.35	+12.372	−16 36 54.3	−50.56	21 39.6
17	15 25 55.88	12.422	16 56 55.3	49.52	21 40.6
18	15 30 54.61	12.472	17 16 30.9	48.45	21 41.7
19	15 35 54.52	12.521	17 35 40.4	47.30	21 42.8
20	15 40 55.61	12 570	17 54 23.0	46.21	21 43.9
21	15 45 57.86	+12.618	−18 12 36.0	−45.04	21 45.0
22	15 51 1.28	12.666	18 20 24.6	43.84	21 46.1
23	15 56 5.85	12.714	18 47 42.1	42.61	21 47.2
24	16 1 11.57	12.762	19 4 29.8	41.35	21 48.4
25	16 6 18.42	12.809	19 20 46.9	40.06	21 49.6
26	16 11 26.38	+12.855	−19 36 32.6	−38.74	21 50.8
27	16 16 35.45	12.900	19 51 46.4	37.40	21 52.0
28	16 21 45.60	12.945	20 6 27.6	36 03	21 53.3
29	16 26 56.81	12.988	20 20 35.6	34.63	21 54.5
30	16 32 9.05	13.031	20 34 9.8	33.21	21 55.8
31	16 37 22.29	+13.073	−20 47 9.6	−31.77	21 57.1
32	16 42 36.52	+13.113	−20 59 34.4	−30.30	21 58.4

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter . .	8″.3	8″.1	7″.8	7″.6	7″.4	7″.2
Hor. Parallax . .	8.6	8.4	8.1	7.9	7.6	7.4

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	7″.0	6″.8	6″.7	6″.5	6″.4	6″.3	6″.2
Hor. Parallax . .	7.2	7.1	6.9	6.8	6.6	6.5	6.4

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	14 52 27.00	+6.249	−15 38 31.9	−28.51	20 8.8
2	14 54 57.09	6.258	15 49 52.9	28.23	20 7.3
3	14 57 27.41	6.268	16 1 7.2	27.95	20 5.9
4	14 59 57.96	6.278	16 12 14.8	27.67	20 4.5
5	15 2 28.74	6.287	16 23 15.5	27.39	20 3.1
6	15 4 59.75	+6.297	−16 34 9.3	−27.10	20 1.6
7	15 7 30.99	6.307	16 44 56.2	26.81	20 0.2
8	15 10 2.47	6.316	16 55 36.0	26.51	19 58.8
9	15 12 34.18	6.326	17 6 8.7	26.21	19 57.4
10	15 15 6.13	6.336	17 16 34.2	25.91	19 56.0
11	15 17 38.31	+6.346	−17 26 52.5	−25.61	19 54.6
12	15 20 10.72	6.356	17 37 3.4	25.30	19 53.2
13	15 22 43.38	6.366	17 47 7.0	24.99	19 51.8
14	15 25 16.27	6.376	17 57 3.1	24 68	19 50.4
15	15 27 49.39	6.386	18 6 51.8	24.37	19 49.0
16	15 30 22.75	+6.395	−18 16 32.8	−24.05	19 47.6
17	15 32 56.34	6.405	18 26 6.2	23.73	19 46.3
18	15 35 30.16	6.414	18 35 31.8	23.41	19 44.9
19	15 38 4.21	6.423	18 44 49.6	23.08	19 43.6
20	15 40 38.48	6.432	18 53 59.5	22.75	19 42.2
21	15 43 12.97	+6.441	−19 3 1.5	−22.42	19 40.8
22	15 45 47.67	6.450	19 11 55.4	22.08	19 39.5
23	15 48 22.58	6.459	19 20 41.3	21.74	19 38.1
24	15 50 57.69	6.467	19 29 19.0	21.40	19 36.8
25	15 53 33.00	6.475	19 37 48.3	21.05	19 35.4
26	15 56 8.49	+6.483	−19 46 9.3	−20.70	19 34.1
27	15 58 44.17	6.490	19 54 21.9	20.35	19 32.7
28	16 1 20.02	6.497	20 2 26.0	20.00	19 31.4
29	16 3 56.04	6.504	20 10 21.6	19.64	19 30.0
30	16 6 32.22	6.511	20 18 8.6	19.28	19 28.7
31	16 9 8.55	+6.517	−20 25 46.9	−18.92	19 27.4
32	16 11 45.03	+6.523	−20 33 16.5	−18.56	19 26.0

Day of the Month.	0th.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter . .	2″.5	2″.7	2″.7	2″.8	2″.8	2″.9	3″.0
Hor. Parallax . .	4.5	4.6	4.7	4.8	4.9	5.0	5.2

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	16 11 45.03	+6.523	−20 33 16.5	−18.56	19 26.0
2	16 14 21.66	6.529	20 40 37.4	18.19	19 24.7
3	16 16 58.42	6.535	20 47 49.5	17.82	19 23.3
4	16 19 35.32	6.541	20 54 52.8	17.45	19 22.0
5	16 22 12.35	6.546	21 1 47.2	17.08	19 20.6
6	16 24 49.50	+6.551	−21 8 32.7	−16.71	19 19.3
7	16 27 26.78	6.556	21 15 9.3	16.34	19 18.0
8	16 30 4.17	6.561	21 21 36.9	15.97	19 16.7
9	16 32 41.68	6.565	21 27 55.5	15.59	19 15.4
10	16 35 19.30	6.570	21 34 5.2	15.21	19 14.1
11	16 37 57.03	+6.574	−21 40 5.8	−14.84	19 12.8
12	16 40 34.85	6.578	21 45 57.4	14.46	19 11.5
13	16 43 12.76	6.582	21 51 39.8	14.08	19 10.2
14	16 45 50.77	6.586	21 57 13.2	13.70	19 8.9
15	16 48 28.86	6.589	22 2 37.5	13.32	19 7.6
16	16 51 7.02	+6.592	−22 7 52.7	−12.94	19 6.3
17	16 53 45.25	6.594	22 12 58.6	12.56	19 5.0
18	16 56 23.53	6.596	22 17 55.4	12.18	19 3.7
19	16 59 1.86	6.597	22 22 42.9	11.79	19 2.4
20	17 1 40.21	6.598	22 27 21.1	11.40	19 1.1
21	17 4 18.59	+6.599	−22 31 50.1	−11.02	18 59.8
22	17 6 56.97	6.599	22 36 9.9	10.64	18 58.5
23	17 9 35.35	6.599	22 40 20.4	10.25	18 57.2
24	17 12 13.73	6.598	22 44 21.5	9.86	18 55.9
25	17 14 52.07	6.596	22 48 13.4	9.47	18 54.6
26	17 17 30.37	+6.594	−22 51 56.0	− 9.08	18 53.3
27	17 20 8.62	6.592	22 55 29.3	8.69	18 52.0
28	17 22 46.81	6.589	22 58 53.3	8.31	18 50.7
29	17 25 24.92	6.586	23 2 8.1	7.92	18 49.3
30	17 28 2.95	6.583	23 5 13.7	7.54	18 48.0
31	17 30 40.89	+6.579	−23 8 10.0	− 7.16	18 46.7
32	17 33 18.72	+6.574	−23 10 57.2	− 6.78	18 45.4

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . .	3″.1	3″.1	3″.2	3″.3	3″.4	3″.6
Hor. Parallax . .	5.3	5.5	5.6	5.8	6.0	6.2

Note.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	17 28 2.95	+6.583	−23 5 13.7	−7.54	18 48.0
2	17 30 40.89	6.579	23 8 10.0	7.16	18 46.7
3	17 33 18.72	6.574	23 10 57.2	6.78	18 45.4
4	17 35 56.44	6.569	23 13 35.2	6.40	18 44.1
5	17 38 34.04	6.564	23 16 4.1	6.02	18 42.8
6	17 41 11.51	+6.559	−23 18 24.0	−5.64	18 41.5
7	17 43 48.85	6.553	23 20 34.8	5.26	18 40.2
8	17 46 26.04	6.547	23 22 36.6	4.89	18 38.9
9	17 49 3.08	6.541	23 24 29.5	4.52	18 37.6
10	17 51 39.97	6.534	23 26 13.5	4.15	18 36.2
11	17 54 16.69	+6.527	−23 27 48.7	−3.78	18 34.9
12	17 56 53.24	6.519	23 29 15.1	3.42	18 33.5
13	17 59 29.60	6.511	23 30 32.7	3.06	18 32.2
14	18 2 5.77	6.503	23 31 41.6	2.70	18 30.8
15	18 4 41.73	6.494	23 32 41.9	2.34	18 29.5
16	18 7 17.47	+6.485	−23 33 33.6	−1.98	18 28.1
17	18 9 52.99	6.475	23 34 16.7	1.63	18 26.8
18	18 12 28.26	6.464	23 34 51.4	1.28	18 25.4
19	16 15 3.26	6.453	23 35 17.7	0.93	18 24.1
20	18 17 38.00	6.441	23 35 35.7	0.58	18 22.7
21	18 20 12.44	+6.429	−23 35 45.5	−0.24	18 21.3
22	18 22 46.58	6.416	23 35 47.0	+0.10	18 19.9
23	18 25 20.39	6.402	23 35 40.4	0.43	18 18.5
24	18 27 53.87	6.387	23 35 25.9	0.76	18 17.1
25	18 30 26.99	6.372	23 35 3.4	1.09	18 15.8
26	18 32 59.74	+6.356	−23 34 33.2	+1.42	18 14.4
27	18 35 32.10	6.340	23 33 55.2	1.73	18 12.9
28	18 38 4.06	6.323	23 33 9.7	2.04	18 11.5
29	18 40 35.61	6.305	23 32 16.6	2.35	18 10.1
30	18 43 6.73	6.287	23 31 16.2	2.66	18 8.7
31	18 45 37.40	+6.269	−23 30 8.6	+2.97	18 7.3
32	18 48 7.63	+6.250	−23 28 53.8	+3.27	18 5.8

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter . .	3″.7	3″.8	3″.9	4″.1	4″.2	4″.4
Hor. Parallax . .	6.4	6.7	6.9	7.2	7.4	7.7

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	18 48 7.63	+6.250	−23 28 53.8	+3.27	18 5.8
2	18 50 37.39	6.231	23 27 32.0	3.56	18 4.4
3	18 53 6.69	6.211	23 26 3.4	3.84	18 2.9
4	18 55 35.50	6.191	23 24 28.0	4.11	18 1.4
5	18 58 3.82	6.170	23 22 46.0	4.38	18 0.0
6	19 0 31.64	+6.149	−23 20 57.6	+4.65	17 58.5
7	19 2 58.95	6.127	23 19 2.8	4.92	17 57.0
8	19 5 25.74	6.105	23 17 1.8	5.18	17 55.5
9	19 7 52.00	6.083	23 14 54.7	5.43	17 54.0
10	19 10 17.72	6.060	23 12 41.6	5.67	17 52.5
11	19 12 42.89	+6.037	−23 10 22.7	+5.91	17 50.9
12	19 15 7.48	6.013	23 7 58.3	6.14	17 49.4
13	19 17 31.50	5.988	23 5 28.3	6.37	17 47.8
14	19 19 54.93	5.963	23 2 53.0	6.59	17 46.3
15	19 22 17.74	5.937	23 0 12.5	6.80	17 44.7
16	19 24 39.91	+5.910	−22 57 27.0	+7.00	17 43.1
17	19 27 1.44	5.883	22 54 36.6	7.20	17 41.5
18	19 29 22.30	5.855	22 51 41.6	7.39	17 39.9
19	19 31 42.46	5 826	22 48 42.2	7.57	17 38.3
20	19 34 1.91	5.796	22 45 38.4	7.74	17 36.7
21	19 36 20.63	+5.765	−22 42 30.5	+7.91	17 35.1
22	19 38 38.61	5.733	22 39 18.7	8.07	17 33.4
23	19 40 55.82	5.700	22 36 3.2	8.22	17 31.8
24	19 43 12.22	5.666	22 32 44.3	8.36	17 30.1
25	19 45 27.80	5.632	22 29 22.1	8.49	17 28.4
26	19 47 42.55	+5.597	−22 25 56.9	+8.61	17 26.7
27	19 49 56.44	5.561	22 22 29.0	8.72	17 25.0
28	19 52 9.46	5.524	22 18 58.4	8.82	17 23.2
29	19 54 21.60	5.487	22 15 25.4	8.91	17 21.5
30	19 56 32.84	5.449	22 11 50.4	9.00	17 19.7
31	19 58 43.16	+5.411	−22 8 13.4	+9.08	17 17.9
32	20 0 52.54	+5.372	−22 4 34.8	+9.15	17 16.1

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . .	4″.6	4″.8	5″.0	5″.2	5″.4	5″.7
Hor. Parallax . .	8.0	8.4	8.8	9.2	9.6	10.0

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	19 58 43.16	+5.411	−22 8 13.4	+9.08	17 17.9	1	20 56 35.18	+3.730	−20 23 17.2	+5.88	16 13.2
2	20 0 52.54	5.372	22 4 34.8	9.15	17 16.1	2	20 58 3.81	3.655	20 20 59.7	5.57	16 10.7
3	20 3 0.98	5.332	22 0 54.6	9.21	17 14.3	3	20 59 30.64	3.579	20 18 49.7	5.25	16 8.2
4	20 5 8.47	5.292	21 57 13.2	9.25	17 12.5	4	21 0 55.64	3.502	20 16 47.4	4.92	16 5.7
5	20 7 14.98	5.251	21 53 30.9	9.28	17 10.7	5	21 2 18.76	3.424	20 14 53.2	4.58	16 3.1
6	20 9 20.51	+5.209	−21 49 47.7	+9.31	17 8.8	6	21 3 39.98	+3.344	−20 13 7.4	+4.22	16 0.5
7	20 11 25.02	5.167	21 46 4.0	9.33	17 6.9	7	21 4 59.28	3.262	20 11 30.3	3.85	15 57.8
8	20 13 28.52	5.124	21 42 19.9	9.34	17 5.0	8	21 6 16.59	3.179	20 10 2.2	3.47	15 55.2
9	20 15 30.97	5.080	21 38 35.8	9.34	17 3.1	9	21 7 31.86	3.094	20 8 43.5	3.08	15 52.5
10	20 17 32.36	5.035	21 34 51.9	9.32	17 1.2	10	21 8 45.05	3.007	20 7 34.4	2.67	15 49.7
11	20 19 32.66	+4.989	−21 31 8.4	+9.29	16 59.2	11	21 9 56.14	+2.917	−20 6 35.2	+2.25	15 46.9
12	20 21 31.86	4.943	21 27 25.5	9.25	16 57.3	12	21 11 5.06	2.826	20 5 46.3	1.82	15 44.1
13	20 23 29.94	4.895	21 23 43.6	9.20	16 55.3	13	21 12 11.77	2.733	20 5 7.8	1.38	15 41.3
14	20 25 26.85	4.846	21 20 2.9	9.15	16 53.3	14	21 13 16.20	2.637	20 4 40.2	0.92	15 38.4
15	20 27 22.56	4.796	21 16 23.8	9.09	16 51.3	15	21 14 18.30	2.539	20 4 23.9	+0.44	15 35.5
16	20 29 17.04	+4.744	−21 12 46.5	+9.01	16 49.2	16	21 15 18.01	+2.438	−20 4 19.2	−0.05	15 32.5
17	20 31 10.27	4.691	21 9 11.3	8.91	16 47.1	17	21 16 15.31	2.335	20 4 26.2	0.55	15 29.5
18	20 33 2.21	4.637	21 5 38.5	8.80	16 45.0	18	21 17 10.11	2.230	20 4 45.4	1.06	15 26.5
19	20 34 52.84	4.581	21 2 8.5	8.68	16 42.9	19	21 18 2.35	2.123	20 5 17.1	1.59	15 23.4
20	20 36 42.11	4.524	20 58 41.5	8.55	16 40.8	20	21 18 51.99	2.013	20 6 1.5	2.12	15 20.2
21	20 38 29.98	+4.465	−20 55 17.9	+8.40	16 38.6	21	21 19 38.99	+1.901	−20 6 58.8	−2.66	15 17.0
22	20 40 16.43	4.405	20 51 58.1	8.24	16 36.5	22	21 20 23.30	1.788	20 8 9.1	3.21	15 13.8
23	20 42 1.41	4.343	20 48 42.4	8.06	16 34.3	23	21 21 4.86	1.674	20 9 32.8	3.77	15 10.5
24	20 43 44.89	4.280	20 45 31.1	7.87	16 32.0	24	21 21 43.64	1.558	20 11 9.9	4.33	15 7.2
25	20 45 26.85	4.216	20 42 24.5	7.67	16 29.8	25	21 22 19.58	1.440	20 13 0.6	4.90	15 3.9
26	20 47 7.25	+4.150	−20 39 23.0	+7.45	16 27.5	26	21 22 52.67	+1.319	−20 15 4.9	−5.47	15 0.4
27	20 48 46.06	4.083	20 36 26.8	7.22	16 25.2	27	21 23 22.88	1.198	20 17 22.7	6.04	14 57.0
28	20 50 23.24	4.015	20 33 36.4	6.98	16 22.8	28	21 23 50.18	1.076	20 19 54.1	6.61	14 53.5
29	20 51 58.77	3.946	20 30 51.9	6.73	16 20.5	29	21 24 14.52	0.953	20 22 39.2	7.17	14 49.9
30	20 53 32.63	3.875	20 28 13.6	6.46	16 18.1	30	21 24 35.89	0.829	20 25 37.9	7.73	14 46.3
31	20 55 4.77	+3.803	−20 25 42.0	+6.18	16 15.6	31	21 24 54.28	+0.704	−20 28 50.1	−8.28	14 42.6
32	20 56 35.18	+3.730	−20 23 17.2	+5.86	16 13.2	32	21 25 9.66	+0.577	−20 32 15.5	−8.83	14 38.9

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.	Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter . .	6.0″	6.3″	6.6″	7.0″	7.3″	7.7″	Semidiameter . .	8.1″	8.6″	9.0″	9.5″	10.0″	10.6″
Hor. Parallax . .	10.5	11.1	11.6	12.2	12.8	13.5	Hor. Parallax . .	14.2	15.0	15.8	16.7	17.6	18.5

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	21 24 54.28	+0.704	−20 28 50.1	− 8.98	14 42.6
2	21 25 9.66	0.577	20 32 15.5	8.83	14 38.9
3	21 25 21.99	0.450	20 35 54.0	9.37	14 35.1
4	21 25 31.27	0.323	20 39 45.5	9.91	14 31.3
5	21 25 37.50	0.195	20 43 49.8	10.43	14 27.5
6	21 25 40.64	+0.066	−20 48 6.5	−10.94	14 23.6
7	21 25 40.69	−0.063	20 52 35.5	11.44	14 19.6
8	21 25 37.63	0.193	20 57 16.3	11.93	14 15.6
9	21 25 31.44	0.323	21 2 8.7	12.41	14 11.5
10	21 25 22.13	0.453	21 7 12.1	12.86	14 7.4
11	21 25 9.72	−0.582	−21 12 26.3	−13.29	14 3.3
12	21 24 54.20	0.711	21 17 50.7	13.70	13 59.1
13	21 24 35.56	0.841	21 23 24.9	14.10	13 54.8
14	21 24 13.84	0.969	21 29 8.2	14.48	13 50.5
15	21 23 49.04	1.096	21 35 0.1	14.82	13 46.1
16	21 23 21.21	−1.222	−21 40 59.8	−15.13	13 41.7
17	21 22 50.40	1.345	21 47 6.7	15.41	13 37.2
18	21 22 16.66	1.466	21 53 19.9	15.66	13 32.7
19	21 21 40.04	1.584	21 59 38.7	15.88	13 28.1
20	21 21 0.62	1.699	22 6 2.0	16.06	13 23.5
21	21 20 18.47	−1.810	−22 12 29.0	−16.19	13 18.9
22	21 19 33.72	1.917	22 18 58.6	16.27	13 14.2
23	21 18 46.47	2.018	22 25 29.8	16.31	13 9.4
24	21 17 56.85	2.115	22 32 1.4	16.30	13 4.5
25	21 17 4.97	2.205	22 38 32.4	16.24	12 59.8
26	21 16 11.01	−2.288	−22 45 1.6	−16.13	12 55.0
27	21 15 15.13	2.365	22 51 27.6	15.96	12 50.1
28	21 14 17.48	2.436	22 57 49.6	15.74	12 45.2
29	21 13 18.19	2.501	23 4 6.4	15.47	12 40.3
30	21 12 17.46	2.557	23 10 16.8	15.17	12 35.4
31	21 11 15.46	−2.606	−23 16 19.7	−14.84	12 30.4
32	21 10 12.39	−2.647	−23 22 13.9	−14.48	12 25.4

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	21 10 12.39	−2.647	−23 22 13.9	−14.48	12 25.4
2	21 9 8.42	2.681	23 27 58.6	14.09	12 20.4
3	21 8 3.72	2.707	23 33 32.8	13.68	12 15.3
4	21 6 58.48	2.726	23 38 55.4	13.22	12 10.3
5	21 5 52.88	2.736	23 44 5.7	12.71	12 5.3
6	21 4 47.13	−2.739	−23 49 2.8	−12.15	12 0.3
7	21 3 41.39	2.735	23 53 46.0	11.53	11 55.3
8	21 2 35.83	2.724	23 58 14.4	10.86	11 50.3
9	21 1 30.65	2.704	24 2 27.4	10.18	11 45.3
10	21 0 26.04	2.677	24 6 24.5	9.49	11 40.3
11	20 59 22.17	−2.642	−24 10 5.0	− 8.79	11 35.3
12	20 58 19.23	2.600	24 13 28.3	8.08	11 30.4
13	20 57 17.38	2.551	24 16 34.2	7.37	11 25.4
14	20 56 16.80	2.494	24 19 22.1	6.63	11 20.4
15	20 55 17.67	2.430	24 21 51.8	5.87	11 15.5
16	20 54 20.18	−2.358	−24 24 2.8	−5.09	11 10.7
17	20 53 24.48	2.279	24 25 54.9	4.29	11 5.8
18	20 52 30.76	2.194	24 27 28.0	3.48	11 1.0
19	20 51 39.17	2.103	24 28 41.9	2.67	10 56.3
20	20 50 49.84	2.005	24 29 36.4	1.86	10 51.6
21	20 50 2.93	−1.901	−24 30 11.5	−1.05	10 46.9
22	20 49 18.60	1.791	24 30 27.0	−0.24	10 42.2
23	20 48 36.96	1.675	24 30 23.1	+0.56	10 37.6
24	20 47 58.15	1.556	24 29 59.9	1.36	10 33.1
25	20 47 22.26	1.432	24 29 17.4	2.15	10 28.6
26	20 46 49.40	−1.305	−24 28 15.8	+2.94	10 24.1
27	20 46 19.63	1.174	24 26 55.3	3.73	10 19.7
28	20 45 53.06	1.040	24 25 16.2	4.51	10 15.3
29	20 45 29.72	0.904	24 23 18.7	5.27	10 11.0
30	20 45 9.65	0.767	24 21 3.3	6.01	10 6.8
31	20 44 52.89	−0.629	−24 18 30.0	+6.74	10 2.6
32	20 44 39.46	−0.490	−24 15 39.5	+7.46	9 58.5

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
	″	″	″	″	″	″
Semidiameter . . .	11.1	11.6	12.1	12.5	12.9	13.2
Hor. Parallax . . .	19.5	20.4	21.2	22.0	22.6	23.1

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
	″	″	″	″	″	″
Semidiameter	13.3	13.4	13.3	13.1	12.8	12.4
Hor. Parallax	23.3	23.4	23.2	23.0	22.4	21.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	20 44 39.46	−0.490	−24 15 39.5	+ 7.46	9 58.5	1	21 2 20.18	+3.184	−21 2 2.7	+23.35	8 18.7
2	20 44 29.39	0.349	24 12 32.0	8.16	9 54.4	2	21 3 37.66	3.273	20 52 37.6	23.75	8 16.1
3	20 44 22.70	0.209	24 9 7.7	8.84	9 50.4	3	21 4 57.25	3.350	20 43 2.9	24.15	8 13.5
4	20 44 19.37	−0.069	24 5 27.2	9.51	9 46.5	4	21 6 18.88	3.443	20 33 18.8	24.54	8 10.9
5	20 44 19.38	+0.070	24 1 30.9	10.17	9 42.5	5	21 7 42.49	3.524	20 23 25.5	24.92	8 8.4
6	20 44 22.73	+0.209	−23 57 19.1	+10.81	9 38.7	6	21 9 8.02	+3.603	−20 13 23.0	+25.29	8 5.9
7	20 44 29.41	0.347	23 52 52.1	11.44	9 34.9	7	21 10 35.40	3.679	20 3 11.5	25.66	8 3.4
8	20 44 39.39	0.484	23 48 10.2	12.05	9 31.1	8	21 12 4.60	3.753	19 52 51.2	26.03	8 0.9
9	20 44 52.64	0.620	23 43 13.9	12.64	9 27.4	9	21 13 35.55	3.825	19 42 22.1	26.39	7 58.5
10	20 45 9.13	0.755	23 38 3.5	13.22	9 23.8	10	21 15 8.21	3.895	19 31 44.3	26.75	7 56.1
11	20 45 28.82	+0.888	−23 32 39.3	+13.79	9 20.2	11	21 16 42.51	+3.963	−19 20 57.9	+27.11	7 53.8
12	20 45 51.70	1.020	23 27 1.6	14.35	9 16.7	12	21 18 18.42	4.029	19 10 3.0	27.46	7 51.5
13	20 46 17.77	1.151	23 21 10.6	14.90	9 13.3	13	21 19 55.88	4.093	18 58 59.7	27.81	7 49.2
14	20 46 46.96	1.281	23 15 6.5	15.44	9 9.8	14	21 21 34.87	4.156	18 47 48.1	28.16	7 46.9
15	20 47 19.25	1.409	23 8 49.7	15.97	9 6.4	15	21 23 15.35	4.218	18 36 28.1	28.51	7 44.6
16	20 47 54.59	+1.535	−23 2 20.3	+16.49	9 3.1	16	21 24 57.28	+4.278	−18 24 59.8	+28.85	7 42.4
17	20 48 32.94	1.660	22 55 38.6	16.99	8 59.8	17	21 26 40.62	4.335	18 13 23.4	29.19	7 40.2
18	20 49 14.28	1.784	22 48 44.7	17.49	8 56.5	18	21 28 25.33	4.390	18 1 38.8	29.53	7 38.0
19	20 49 58.55	1.906	22 41 39.0	17.98	8 53.3	19	21 30 11.36	4.444	17 49 45.9	29.87	7 35.8
20	20 50 45.71	2.025	22 34 21.5	18.47	8 50.2	20	21 31 58.68	4.497	17 37 44.8	30.20	7 33.7
21	20 51 35.73	+2.142	−22 26 52.4	+18.95	8 47.1	21	21 33 47.26	+4.549	−17 25 36.0	+30.53	7 31.5
22	20 52 28.54	2.257	22 19 11.9	19.42	8 44.1	22	21 35 37.05	4.599	17 13 19.4	30.86	7 29.4
23	20 53 24.09	2.370	22 11 20.2	19.88	8 41.1	23	21 37 28.03	4.647	17 0 54.8	31.18	7 27.4
24	20 54 22.34	2.482	22 3 17.5	20.34	8 38.2	24	21 39 20.15	4.694	16 48 22.4	31.50	7 25.3
25	20 55 23.22	2.591	21 55 3.8	20.79	8 35.3	25	21 41 13.35	4.739	16 35 42.5	31.82	7 23.3
26	20 56 26.67	+2.697	−21 46 39.4	+21.23	8 32.4	26	21 43 7.62	+4.782	−16 22 55.1	+32.13	7 21.2
27	20 57 32.63	2.799	21 38 4.5	21.67	8 29.6	27	21 45 2.89	4.824	16 10 0.2	32.44	7 19.2
28	20 58 41.02	2.899	21 29 19.2	22.10	8 26.8	28	21 46 59.15	4.864	15 56 58.0	32.75	7 17.2
29	20 59 51.79	2.997	21 20 23.7	22.52	8 24.0	29	21 48 56.37	4.903	15 43 48.5	33.05	7 15.2
30	21 1 4.87	3.092	21 11 18.1	22.94	8 21.3	30	21 50 54.49	4.940	15 30 32.0	33.35	7 13.3
31	21 2 20.18	+3.184	−21 2 2.7	+23.35	8 18.7	31	21 52 53.47	+4.975	−15 17 8.6	+33.63	7 11.3
32	21 3 37.66	+3.273	−20 52 37.6	+23.75	8 16.1	32	21 54 53.26	+5.009	−15 3 38.4	+33.91	7 9.4

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter. .	11″.9	11″.5	11″.0	10″.5	10″.0	9″.5
Hor. Parallax . .	21.0	20.2	19.3	18.4	17.6	16.7

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	9″.0	8″.6	8″.2	7″.8	7″.4	7″.1	6″.8
Hor. Parallax . .	15.9	15.1	14.4	13.7	13.0	12.4	11.8

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	21 54 53.26	+5.009	−15 3 38.4	+33.91	7 9.4
2	21 56 53.85	5.041	14 50 1.5	34.18	7 7.4
3	21 58 55.21	5.072	14 36 18.1	34.45	7 5.5
4	22 0 57.32	5.102	14 22 28.1	34.71	7 3.6
5	22 3 0.14	5.131	14 8 31.9	34.97	7 1.7
6	22 5 3.62	+5.159	−13 54 29.5	+35.23	6 59.9
7	22 7 7.77	5.186	13 40 21.0	35.48	6 58.0
8	22 9 12.56	5.212	13 26 6.4	35.73	6 56.1
9	22 11 17.97	5.237	13 11 45.9	35.97	6 54.3
10	22 13 23.97	5.262	12 57 19.6	36.21	6 52.4
11	22 15 30.54	+5.286	−12 42 47.6	+36.45	6 50.6
12	22 17 37.69	5.309	12 28 9.9	36.68	6 48.8
13	22 19 45.39	5.332	12 13 26.6	36.91	6 47.0
14	22 21 53.62	5.354	11 58 37.8	37.14	6 45.2
15	22 24 2.37	5.375	11 43 43.5	37.37	6 43.4
16	22 26 11.63	+5.396	−11 28 44.0	+37.59	6 41.6
17	22 28 21.39	5.417	11 13 39.2	37.81	6 39.8
18	22 30 31.64	5.437	10 58 29.1	38.02	6 38.1
19	22 32 42.35	5.456	10 43 14.0	38.23	6 36.3
20	22 34 53.51	5.474	10 27 54.0	38.44	6 34.6
21	22 37 5.11	+5.492	−10 12 29.1	+38.64	6 32.8
22	22 39 17.13	5.509	9 56 59.4	38.83	6 31.1
23	22 41 29.56	5.526	9 41 25.0	39.02	6 29.3
24	22 43 42.39	5.542	9 25 46.2	39.20	6 27.6
25	22 45 55.59	5.557	9 10 3.1	39.38	6 25.9
26	22 48 9.15	+5.572	− 8 54 15.8	+39.56	6 24.2
27	22 50 23.05	5.586	8 38 24.5	39.72	6 22.5
28	22 52 37.27	5.599	8 22 29.3	39.88	6 20.8
29	22 54 51.81	5.612	8 6 30.3	40.03	6 19.1
30	22 57 6.66	5.624	7 50 27.8	40.18	6 17.4
31	22 59 21.79	+5.636	− 7 34 21.9	+40.32	6 15.7
32	23 1 37.20	+5.647	− 7 18 12.7	+40.45	6 14.0

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter . .	6″.5	6″.2	5″.9	5″.6	5″.4	5″.2
Hor. Parallax . .	11.3	10.8	10.3	9.9	9.5	9.1

DECEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	22 59 21.79	+5.636	−7 34 21.9	+40.32	6 15.7
2	23 1 37.20	5.647	7 18 12.7	40.45	6 14.0
3	23 3 52.88	5.658	7 2 0.3	40.57	6 12.4
4	23 6 8.81	5.669	6 45 44.9	40.69	6 10.7
5	23 8 25.01	5.679	6 29 26.6	40.81	6 9.0
6	23 10 41.45	+5.690	−6 13 5.6	+40.93	6 7.3
7	23 12 58.14	5.700	5 56 41.8	41.04	6 5.7
8	23 15 15.07	5.710	5 40 15.6	41.14	6 4.0
9	23 17 32.23	5.720	5 23 46.9	41.24	6 2.4
10	23 19 49.63	5.730	5 7 16.0	41.34	6 0.7
11	23 22 7.25	+5.739	−4 50 42.8	+41.43	5 59.1
12	23 24 25.11	5.749	4 34 7.5	41.51	5 57.4
13	23 26 43.20	5.759	4 17 30.2	41.59	5 55.8
14	23 29 1.52	5.768	4 0 50.9	41.67	5 54.1
15	23 31 20.07	5.778	3 44 9.8	41.75	5 52.5
16	23 33 38 85	+5.788	−3 27 27.0	+41.82	5 50.9
17	23 35 57.85	5.797	3 10 42.6	41.88	5 49.3
18	23 38 17.09	5.806	2 53 56.7	41.94	5 47.7
19	23 40 36.54	5.815	2 37 9.4	41.99	5 46.0
20	23 42 56.21	5.824	2 20 20.9	42.04	5 44.4
21	23 45 16.10	+5.833	−2 3 31.3	+42.09	5 42.8
22	23 47 36.20	5.842	1 46 40.8	42.13	5 41.2
23	23 49 56.51	5.850	1 29 49.4	42.16	5 39.6
24	23 52 17.02	5.859	1 12 57.3	42.18	5 38.0
25	23 54 37.73	5.867	0 56 4.8	42.20	5 36.4
26	23 56 58.64	+5.875	−0 39 11.9	+42.21	5 34.8
27	23 59 19.74	5.883	0 22 18.7	42.21	5 33.2
28	0 1 41.03	5.891	−0 5 25.5	42.21	5 31.6
29	0 4 2.51	5.899	+0 11 27.6	42.20	5 30.1
30	0 6 24.16	5.907	0 28 20.5	42.19	5 28.5
31	0 8 46.00	+5.914	+0 45 13.0	+42.17	5 26.9
32	0 11 8.02	+5.921	+1 2 4.9	+42.15	5 25.3

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.	35th.
Semidiameter . .	5″.0	4″.8	4″.6	4″.4	4″.3	4″.1	4″.0
Hor. Parallax . .	8.8	8.4	8.1	7.8	7.5	7.2	7.0

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	23 1 12.84	+1.563	−7 33 13.7	+10.12	4 18.2	1	23 23 33.53	+1.998	−5 8 14.7	+13.01	2 38.5
2	23 1 50.57	1.581	7 29 9.4	10.24	4 14.9	2	23 24 21.60	2.008	5 3 1.7	13.08	2 35.3
3	23 2 28.73	1.599	7 25 2.2	10.36	4 11.6	3	23 25 9.90	2.017	4 57 47.2	13.14	2 32.2
4	23 3 7.33	1.617	7 20 52.2	10.47	4 8.3	4	23 25 58.43	2.026	4 52 31.1	13.20	2 29.1
5	23 3 46.34	1.634	7 16 39.5	10.58	4 5.0	5	23 26 47.17	2.035	4 47 13.6	13.26	2 26.0
6	23 4 25.77	+1.651	−7 12 24.2	+10.69	4 1.7	6	23 27 36.13	+2.044	−4 41 54.5	+13.32	2 22.9
7	23 5 5.60	1.668	7 8 6.3	10.80	3 58.4	7	23 28 25.30	2.053	4 36 34.0	13.38	2 19.8
8	23 5 45.84	1.684	7 3 45.7	10.91	3 55.2	8	23 29 14.66	2.061	4 31 12.1	13.44	2 16.7
9	23 6 26.46	1.700	6 59 22.6	11.02	3 51.9	9	23 30 4.22	2.069	4 25 48.9	13.49	2 13.6
10	23 7 7.47	1.716	6 54 57.0	11.12	3 48.7	10	23 30 53.97	2.077	4 20 24.4	13.54	2 10.5
11	23 7 48.85	+1.732	−6 50 28.9	+11.22	3 45.4	11	23 31 43.91	+2.085	−4 14 58.7	+13.59	2 7.4
12	23 8 30.60	1.747	6 45 58.3	11.32	3 42.2	12	23 32 34.02	2.092	4 9 31.8	13.64	2 4.3
13	23 9 12.72	1.762	6 41 25.4	11.42	3 38.9	13	23 33 24.31	2.099	4 4 3.7	13.69	2 1.2
14	23 9 55.18	1.777	6 36 50.2	11.52	3 35.7	14	23 34 14.77	2.106	3 58 34.4	13.74	1 58.1
15	23 10 38.00	1.791	6 32 12.6	11.62	3 32.5	15	23 35 5.39	2.113	3 53 4.0	13.79	1 55.0
16	23 11 21.15	+1.805	−6 27 32.8	+11.71	3 29.3	16	23 35 56.18	+2.120	−3 47 32.5	+13.84	1 51.9
17	23 12 4.65	1.819	6 22 50.7	11.80	3 26.1	17	23 36 47.12	2.126	3 42 0.0	13.88	1 48.8
18	23 12 48.48	1.833	6 18 6.4	11.89	3 22.9	18	23 37 38.21	2.132	3 36 26.4	13.92	1 45.7
19	23 13 32.63	1.846	6 13 20.0	11.98	3 19.7	19	23 38 29.46	2.138	3 30 51.8	13.96	1 42.6
20	23 14 17.10	1.859	6 8 31.4	12.07	3 16.5	20	23 39 20.84	2.144	3 25 16.3	14.00	1 39.5
21	23 15 1.89	+1.872	−6 3 40.7	+12.16	3 13.3	21	23 40 12.36	+2.150	−3 19 39.9	+14.04	1 36.5
22	23 15 46.98	1.885	5 58 47.9	12.24	3 10.1	22	23 41 4.02	2.155	3 14 2.6	14.08	1 33.4
23	23 16 32.38	1.898	5 53 53.1	12.33	3 6.9	23	23 41 55.81	2.160	3 8 24.4	14.11	1 30.3
24	23 17 18.07	1.910	5 48 56.3	12.41	3 3.8	24	23 42 47.71	2.165	3 2 45.4	14.14	1 27.2
25	23 18 4.05	1.922	5 43 57.5	12.49	3 0.6	25	23 43 39.72	2.170	2 57 5.6	14.17	1 24.2
26	23 18 50.32	+1.934	−5 38 56.8	+12.57	2 57.4	26	23 44 31.86	+2.175	−2 51 25.1	+14.20	1 21.1
27	23 19 36.86	1.945	5 33 54.3	12.65	2 54.2	27	23 45 24.12	2.179	2 45 43.9	14.23	1 18.0
28	23 20 23.68	1.956	5 28 49.9	12.72	2 51.1	28	23 46 16.47	2.183	2 40 2.1	14.26	1 14.9
29	23 21 10.76	1.967	5 23 43.7	12.80	2 47.9	29	23 47 8.91	2.187	2 34 19.6	14.28	1 11.9
30	23 21 58.10	1.978	5 18 35.7	12.87	2 44.8	30	23 48 1.45	2.191	2 28 36.6	14.30	1 8.9
31	23 22 45.69	+1.988	−5 13 26.0	+12.94	2 41.6	31	23 48 54.07	+2.194	−2 22 53.0	+14.32	1 5.8
32	23 23 33.53	+1.998	−5 8 14.7	+13.01	2 38.5	32	23 49 46.77	+2.197	−2 17 9.0	+14.34	1 2.8

Day of the Month.	0th.	8th.	16th.	24th.	Day of the Month.	1st.	9th.	17th.	25th.
Polar Semidiameter . .	17.″7	17.″3	17.″0	16.″7	Polar Semidiameter . .	16.″5	16.″3	16.″1	16.″0
Horizontal Parallax . .	1.7	1.6	1.6	1.6	Horizontal Parallax . .	1.5	1.5	1.5	1.5

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

	MARCH.						APRIL.				
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	23 48 1.45	+2.191	−2 28 36.6	+14.30	1 8.9	1	0 15 30.44	+2.214	+0 30 0.7	+14.28	23 31.3
2	23 48 54.07	2.194	2 22 53.0	14.32	1 5.8	2	0 16 23.55	2.212	0 35 43.1	14.26	23 28.2
3	23 49 46.77	2.197	2 17 9.0	14.34	1 2.8	3	0 17 16.61	2.209	0 41 24.8	14.23	23 25.2
4	23 50 39.54	2.200	2 11 24.5	14.36	0 59.7	4	0 18 9.60	2.207	0 47 5.9	14.20	23 22.1
5	23 51 32.39	2.203	2 5 39.6	14.38	0 56.7	5	0 19 2.53	2.204	0 52 46.3	14.17	23 19.1
6	23 52 25.30	+2.206	−1 59 54.4	+14.39	0 53.6	6	0 19 55.40	+2.201	+0 58 26.0	+14.14	23 16.0
7	23 53 18.27	2.208	1 54 8.8	14.40	0 50.6	7	0 20 48.19	2.198	1 4 5.0	14.11	23 13.0
8	23 54 11.30	2.210	1 48 22.9	14.41	0 47.5	8	0 21 40.91	2.195	1 9 43.2	14.08	23 9.9
9	23 55 4.38	2.212	1 42 36.8	14.42	0 44.5	9	0 22 33.54	2.192	1 15 20.6	14.04	23 6.9
10	23 55 57.50	2.214	1 36 50.4	14.43	0 41.4	10	0 23 26.10	2.189	1 20 57.1	14.01	23 3.8
11	23 56 50.67	+2.216	−1 31 3.9	+14.44	0 38.4	11	0 24 18.57	+2.185	+1 26 32.8	+13.97	23 0.8
12	23 57 43.88	2.218	1 25 17.2	14.44	0 35.3	12	0 25 10.95	2.181	1 32 7.6	13.93	22 57.7
13	23 58 37.13	2.219	1 19 30.4	14.45	0 32.3	13	0 26 3.24	2.177	1 37 41.5	13.89	22 54.7
14	23 59 30.41	2.221	1 13 43.5	14.45	0 29.2	14	0 26 55.43	2.173	1 43 14.4	13.85	22 51.6
15	0 0 23.72	2.222	1 7 56.5	14.46	0 26.2	15	0 27 47.52	2.168	1 48 46.4	13.81	22 48.5
16	0 1 17.05	+2.223	−1 2 9.5	+14.46	0 23.1	16	0 28 39.51	+2.164	+1 54 17.3	+13.77	22 45.4
17	0 2 10.40	2.224	0 56 22.5	14.46	0 20.1	17	0 29 31.39	2.159	1 59 47.2	13.73	22 42.4
18	0 3 3.77	2.224	0 50 35.5	14.45	0 17.0	18	0 30 23.16	2.154	2 5 16.1	13.68	22 39.3
19	0 3 57.16	2.225	0 44 48.5	14.45	0 14.0	19	0 31 14.81	2.149	2 10 43.9	13.64	22 36.2
20	0 4 50.56	2.225	0 39 1.7	14.45	0 10.9	20	0 32 6.34	2.144	2 16 10.6	13.59	22 33.1
21	0 5 43.96	+2.225	−0 33 15.0	+14.44	0 7.9	21	0 32 57.75	+2.139	+2 21 36.0	+13.54	22 30.0
22	0 6 37.36	2.225	0 27 28.4	14.44	0 4.8	22	0 33 49.03	2.134	2 27 0.3	13.49	22 26.9
23	0 7 30.76	2.225	0 21 42.0	14.43	0 1.8 23 58.7	23	0 34 40.17	2.128	2 32 23.3	13.44	22 23.8
24	0 8 24.15	2.224	0 15 55.8	14.42	23 55.7	24	0 35 31.17	2.122	2 37 45.1	13.38	22 20.7
25	0 9 17.53	2.224	0 10 9.9	14.41	23 52.6	25	0 36 22.03	2.116	2 43 5.5	13.33	22 17.7
26	0 10 10.89	+2.223	−0 4 24.3	+14.40	23 49.6	26	0 37 12.74	+2.110	+2 48 24.6	+13.27	22 14.6
27	0 11 4.23	2.222	+0 1 20.9	14.38	23 46.5	27	0 38 3.29	2.103	2 53 42.4	13.21	22 11.5
28	0 11 57.55	2.221	0 7 5.8	14.36	23 43.5	28	0 38 53.69	2.096	2 58 58.7	13.15	22 8.4
29	0 12 50.83	2.220	0 12 50.3	14.34	23 40.4	29	0 39 43.91	2.089	3 4 13.6	13.09	22 5.3
30	0 13 44.08	2.218	0 18 34.3	14.32	23 37.4	30	0 40 33.96	2.082	3 9 26.9	13.03	22 2.2
31	0 14 37.28	+2.216	+0 24 17.8	+14.30	23 34.3	31	0 41 23.84	+2.075	+3 14 38.8	+12.97	21 59.1
32	0 15 30.44	+2.214	+0 30 0.7	+14.28	23 31.3	32	0 42 13.54	+2.067	+3 19 49.0	+12.90	21 56.0

Day of the Month.	4th.	12th.	20th.	28th.	Day of the Month.	5th.	13th.	21st.	29th.
Polar Semidiameter . .	15″.9	15″.8	15″.8	15″.8	Polar Semidiameter . .	15″.9	16″.0	16″.1	16″.2
Horizontal Parallax . .	1.5	1.5	1.5	1.5	Horizontal Parallax . .	1.5	1.5	1.5	1.5

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	0 41 23.84	+2.075	+3 14 38.8	+12.97	21 59.1	1	1 5 18.28	+1.747	+5 40 24.4	+10.34	20 20.8
2	0 42 13.54	2.067	3 19 49.0	12.90	21 56.0	2	1 6 0.04	1.733	5 44 31.2	10.23	20 17.6
3	0 43 3.05	2.059	3 24 57.7	12.83	21 52.9	3	1 6 41.45	1.719	5 48 35.5	10.12	20 14.3
4	0 43 52.38	2.051	3 30 4.7	12.76	21 49.8	4	1 7 22.51	1.704	5 52 37.1	10.01	20 11.1
5	0 44 41.51	2.043	3 35 10.1	12.69	21 46.7	5	1 8 3.21	1.689	5 56 36.2	9.90	20 7.8
6	0 45 30.45	+2.035	+3 40 13.8	+12.62	21 43.5	6	1 8 43.56	+1.674	+6 0 32.7	+ 9.79	20 4.6
7	0 46 19.17	2.027	3 45 15.7	12.55	21 40.4	7	1 9 23.54	1.659	6 4 26.4	9.68	20 1.3
8	0 47 7.70	2.018	3 50 16.0	12.48	21 37.2	8	1 10 3.15	1.643	6 8 17.5	9.57	19 58.0
9	0 47 56.02	2.009	3 55 14.5	12.40	21 34.1	9	1 10 42.39	1.627	6 12 5.8	9.46	19 54.7
10	0 48 44.12	2.000	4 0 11.2	12.33	21 30.9	10	1 11 21.24	1.611	6 15 51.4	9.35	19 51.4
11	0 49 32.01	+1.991	+4 5 6.0	+12.25	21 27.8	11	1 11 59.71	+1.595	+6 19 34.3	+ 9.23	19 48.1
12	0 50 19.67	1.981	4 9 59.1	12.17	21 24.6	12	1 12 37.79	1.578	6 23 14.3	9.11	19 44.8
13	0 51 7.11	1.972	4 14 50.2	12.09	21 21.5	13	1 13 15.47	1.561	6 26 51.5	8.99	19 41.5
14	0 51 54.31	1.962	4 19 39.5	12.01	21 18.3	14	1 13 52.74	1.544	6 30 25.9	8.87	19 38.2
15	0 52 41.28	1.952	4 24 26.8	11.93	21 15.2	15	1 14 29.60	1.527	6 33 57.4	8.75	19 34.8
16	0 53 28.01	+1.942	+4 29 12.2	+11.85	21 12.0	16	1 15 6.04	+1.510	+6 37 25.9	+ 8.63	19 31.5
17	0 54 14.49	1.932	4 33 55.6	11.77	21 8.9	17	1 15 42.06	1.492	6 40 51.5	8.50	19 28.2
18	0 55 0.72	1.921	4 38 37.0	11.68	21 5.7	18	1 16 17.64	1.474	6 44 14.1	8.38	19 24.9
19	0 55 46.70	1.910	4 43 16.3	11.60	21 2.6	19	1 16 52.78	1.455	6 47 33.6	8.25	19 21.5
20	0 56 32.41	1.899	4 47 53.6	11.51	20 59.4	20	1 17 27.48	1.436	6 50 50.1	8.12	19 18.2
21	0 57 17.85	+1.888	+4 52 28.7	+11.42	20 56.2	21	1 18 1.72	+1.417	+6 54 3.5	+ 7.99	19 14.8
22	0 58 3.02	1.876	4 57 1.7	11.33	20 53.0	22	1 18 35.50	1.398	6 57 13.7	7.86	19 11.4
23	0 58 47.91	1.864	5 1 32.4	11.24	20 49.8	23	1 19 8.81	1.378	7 0 20.7	7.73	19 8.0
24	0 59 32.51	1.852	5 6 1.0	11.14	20 46.6	24	1 19 41.65	1.358	7 3 24.5	7.60	19 4.6
25	1 0 16.82	1.840	5 10 27.2	11.05	20 43.4	25	1 20 13.99	1.338	7 6 25.0	7.46	19 1.2
26	1 1 0.83	+1.828	+5 14 51.2	+10.95	20 40.2	26	1 20 45.85	+1.317	+7 9 22.3	+ 7.32	18 57.8
27	1 1 44.54	1.815	5 19 12.8	10.85	20 37.0	27	1 21 17.21	1.296	7 12 16.2	7.18	18 54.4
28	1 2 27.93	1.802	5 23 32.0	10.75	20 33.8	28	1 21 48.07	1.275	7 15 6.8	7.04	18 50.9
29	1 3 11.01	1.789	5 27 48.8	10.65	20 30.6	29	1 22 18.42	1.254	7 17 54.1	6.90	18 47.5
30	1 3 53.76	1.775	5 32 3.1	10.55	20 27.3	30	1 22 48.25	1.232	7 20 37.9	6.76	18 44.0
31	1 4 36.19	+1.761	+5 36 15.0	+10.45	20 24.1	31	1 23 17.55	+1.210	+7 23 18.3	+ 6.62	18 40.6
32	1 5 18.28	+1.747	+5 40 24.4	+10.34	20 20.8	32	1 23 46.33	+1.188	+7 25 55.2	+ 6.47	18 37.1

Day of the Month.	7th.	15th.	23d.	31st.	Day of the Month.	8th.	16th.	24th.
Polar Semidiameter . .	16.4″	16.6″	16.9″	17.2″	Polar Semidiameter	17.5″	17.8″	18.2″
Horizontal Parallax . .	1.5	1.6	1.6	1.6	Horizontal Parallax	1.6	1.7	1.7

Note.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	1 23 17.55	+1.210	+7 23 18.3	+6.62	18 40.6	1	1 33 32.17	+0.399	+8 15 27.2	+1.62	16 48.6
2	1 23 46.33	1.188	7 25 55.2	6.47	18 37.1	2	1 33 41.41	0.370	8 16 4.1	1.45	16 44.9
3	1 24 14.57	1.166	7 28 28.6	6.33	18 33.7	3	1 33 49.91	0.340	8 16 36.7	1.28	16 41.1
4	1 24 42.28	1.143	7 30 58.6	6.18	18 30.2	4	1 33 57.71	0.310	8 17 5.1	1.10	16 37.2
5	1 25 9.43	1.120	7 33 25.0	6.03	18 26.7	5	1 34 4.78	0.280	8 17 29.3	0.92	16 33.4
6	1 25 36.03	+1.097	+7 35 47.9	+5.88	18 23.2	6	1 34 11.12	+0.250	+8 17 49.2	+0.75	16 29.6
7	1 26 2.08	1.074	7 38 7.2	5.73	18 19.7	7	1 34 16.73	0.219	8 18 4.9	0.57	16 25.7
8	1 26 27.56	1.050	7 40 23.0	5.58	18 16.2	8	1 34 21.60	0.188	8 18 16.4	0.39	16 21.9
9	1 26 52.47	1.026	7 42 35.1	5.43	18 12.7	9	1 34 25.74	0.157	8 18 23.6	0.21	16 18.0
10	1 27 16.80	1.002	7 44 43.6	5.28	18 9.1	10	1 34 29.14	0.126	8 18 26.6	+0.03	16 14.1
11	1 27 40.55	+0.977	+7 46 48.4	+5.12	18 5.6	11	1 34 31.80	+0.095	+8 18 25.2	−0.15	16 10.2
12	1 28 3.71	0.952	7 48 49.5	4.97	18 2.0	12	1 34 33.71	0.064	8 18 19.5	0.33	16 6.3
13	1 28 26.27	0.927	7 50 46.8	4.81	17 58.5	13	1 34 34.87	0.033	8 18 9.5	0.51	16 2.4
14	1 28 48.22	0.902	7 52 40.4	4.65	17 54.9	14	1 34 35.28	+0.002	8 17 55.2	0.69	15 58.5
15	1 29 9.57	0.876	7 54 30.2	4.49	17 51.3	15	1 34 34.94	−0.029	8 17 36.6	0.87	15 54.5
16	1 29 30.29	+0.850	+7 56 16.2	+4.33	17 47.7	16	1 34 33.84	−0.061	+8 17 13.7	−1.04	15 50.6
17	1 29 50.39	0.824	7 57 58.3	4.17	17 44.1	17	1 34 31.99	0.093	8 16 46.5	1.22	15 46.6
18	1 30 9.85	0.798	7 59 36.5	4.01	17 40.5	18	1 34 29.38	0.125	8 16 15.0	1.40	15 42.6
19	1 30 28.68	0.771	8 1 10.8	3.85	17 36.8	19	1 34 26.01	0.156	8 15 39.2	1.58	15 38.6
20	1 30 46.85	0.744	8 2 41.1	3.68	17 33.2	20	1 34 21.88	0.188	8 14 59.1	1.76	15 34.6
21	1 31 4.37	+0.716	+8 4 7.5	+3.52	17 29.6	21	1 34 17.00	−0.219	+8 14 14.6	−1.94	15 30.6
22	1 31 21.23	0.688	8 5 29.8	3.35	17 25.9	22	1 34 11.37	0.250	8 13 25.9	2.12	15 26.6
23	1 31 37.41	0.660	8 6 48.1	3.18	17 22.2	23	1 34 4.99	0.282	8 12 32.9	2.30	15 22.5
24	1 31 52.93	0.632	8 8 2.3	3.01	17 18.5	24	1 33 57.85	0.313	8 11 35.6	2.47	15 18.4
25	1 32 7.77	0.604	8 9 12.4	2.84	17 14.8	25	1 33 49.97	0.344	8 10 34.2	2.64	15 14.4
26	1 32 21.92	+0.575	+8 10 18.4	+2.66	17 11.1	26	1 33 41.35	−0.375	+8 9 28.6	−2.82	15 10.3
27	1 32 35.38	0.546	8 11 20.3	2.49	17 7.4	27	1 33 32.00	0.405	8 8 18.8	2.99	15 6.2
28	1 32 48.14	0.517	8 12 18.0	2.32	17 3.7	28	1 33 21.91	0.435	8 7 4.9	3.16	15 2.1
29	1 33 0.21	0.488	8 13 11.6	2.14	17 0.0	29	1 33 11.10	0.465	8 5 47.0	3.33	14 58 0
30	1 33 11.57	0.459	8 14 1.0	1.97	16 56.2	30	1 32 59.57	0.495	6 4 25.0	3.50	14 53.9
31	1 33 22.23	+0.429	+8 14 46.2	+1.80	16 52.4	31	1 32 47.33	−0.525	+8 2 59.1	−3.66	14 49.7
32	1 33 32.17	+0.399	+8 15 27.2	+1.62	16 48.6	32	1 32 34.38	−0.554	+8 1 29.2	−3.83	14 45.6

Day of the Month.	2d.	10th.	18th.	26th.	Day of the Month.	3d.	11th.	19th.	27th.
Polar Semidiameter . .	18″.7	19″.1	19″.6	20″.1	Polar Semidiameter . .	20″.6	21″.2	21″.7	22″.2
Horizontal Parallax . .	1.7	1.8	1.8	1.9	Horizontal Parallax . .	1.9	2.0	2.0	2.1

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	1 32 34.38	−0.554	+8 1 29.2	−3.83	14 45.6	1	1 21 29.16	−1.200	+6 51 11.7	−7.32	12 36.5
2	1 32 20.73	0.583	7 59 55.5	3.99	14 41.4	2	1 21 0.23	1.210	6 48 15.2	7.37	12 32.0
3	1 32 6.40	0.611	7 58 17.9	4.15	14 37.2	3	1 20 31.07	1.220	6 45 17.7	7.42	12 27.6
4	1 31 51.38	0.639	7 56 36.5	4.31	14 33.0	4	1 20 1.69	1.229	6 42 19.3	7.46	12 23.2
5	1 31 35.69	0.667	7 54 51.3	4.46	14 28.8	5	1 19 32.13	1.236	6 39 20.0	7.49	12 18.8
6	1 31 19.33	−0.695	+7 53 2.5	−4.61	14 24.6	6	1 19 2.40	−1.242	+6 36 20.0	−7.51	12 14.4
7	1 31 2.32	0.723	7 51 10.0	4.76	14 20.4	7	1 18 32.53	1.248	6 33 19.5	7.53	12 9.9
8	1 30 44.66	0.750	7 49 14.0	4.91	14 16.2	8	1 18 2.53	1.253	6 30 18.6	7.55	12 5.5
9	1 30 26.36	0.777	7 47 14.4	5.06	14 11.9	9	1 17 32.43	1.256	6 27 17.3	7.56	12 1.1
10	1 30 7.42	0.803	7 45 11.3	5 20	14 7.7	10	1 17 2.26	1.259	6 24 15.9	7.56	11 56.6
11	1 29 47.88	−0.828	+7 43 4.8	−5.34	14 3.4	11	1 16 32.02	−1.261	+6 21 14.4	−7.55	11 52.2
12	1 29 27.72	0.852	7 40 55.1	5.48	13 59.1	12	1 16 1.75	1.262	6 18 13.0	7.55	11 47 7
13	1 29 6.97	0.876	7 38 42.0	5.61	13 54.9	13	1 15 31.47	1.262	6 15 11.9	7.54	11 43.3
14	1 28 45.63	0.900	7 36 25.7	5.74	13 50.6	14	1 15 1.20	1.261	6 12 11.2	7.52	11 38.9
15	1 28 23.72	0.924	7 34 6.2	5.87	13 46.3	15	1 14 30.97	1.259	6 9 11.0	7.49	11 34.4
16	1 28 1.26	−0.947	+7 31 43.8	−6.00	13 42.0	16	1 14 0.79	−1.256	+6 6 11.5	−7.46	11 30.0
17	1 27 38.25	0.969	7 29 18.3	6.12	13 37.7	17	1 13 30.70	1.252	6 3 12.8	7.42	11 25.6
18	1 27 14.72	0.991	7 26 50.0	6.24	13 33.3	18	1 13 0.72	1.247	6 0 15.1	7.38	11 21.2
19	1 26 50.68	1.012	7 24 18.9	6.35	13 29.0	19	1 12 30.87	1.241	5 57 18.5	7.33	11 16.7
20	1 26 26.15	1.032	7 21 45.2	6.46	13 24.7	20	1 12 1.17	1.234	5 54 23.2	7.27	11 12.3
21	1 26 1.14	−1.052	+7 19 9.0	−6.56	13 20.3	21	1 11 31.65	−1.226	+5 51 29.2	−7.21	11 7.9
22	1 25 35.67	1 071	7 16 30.3	6.66	13 16.0	22	1 11 2.33	1.217	5 48 36.9	7.14	11 3.5
23	1 25 9.76	1.089	7 13 49.2	6.75	13 11.6	23	1 10 33.25	1.207	5 45 46.3	7.07	10 59.1
24	1 24 43.44	1.105	7 11 5.9	6.84	13 7.2	24	1 10 4.41	1.196	5 42 57.5	6.99	10 54.7
25	1 24 16.71	1.121	7 8 20.6	6.92	13 2.8	25	1 9 35.85	1.184	5 40 10.7	6.91	10 50.3
26	1 23 49.61	−1.136	+7 5 33.3	−7.00	12 58.5	26	1 9 7.58	−1.171	+5 37 26.1	−6.82	10 45.9
27	1 23 22.15	1.151	7 2 44.1	7.08	12 54.1	27	1 8 39.63	1.158	5 34 43.7	6.72	10 41.5
28	1 22 54.36	1.165	6 59 53.2	7.15	12 49.7	28	1 8 12.01	1.144	5 32 3.8	6.62	10 37.1
29	1 22 26.24	1.177	6 57 0.8	7.21	12 45.3	29	1 7 44.75	1.129	5 29 26.3	6.51	10 32.7
30	1 21 57.84	1.189	6 54 6.9	7.27	12 40.9	30	1 7 17.87	1.112	5 26 51.4	6.39	10 28.3
31	1 21 29.16	−1.200	+6 51 11.7	−7.32	12 36.5	31	1 6 51.39	−1.095	+5 24 19.3	−6.27	10 24.0
32	1 21 0.23	−1.210	+6 48 15.2	−7.37	12 32.0	32	1 6 25.32	−1.077	+5 21 50.1	−6.15	10 19.6

Day of the Month.	4th.	12th.	20th.	28th.	Day of the Month.	6th.	14th.	22d.	30th.
Polar Semidiameter . .	22.7″	23.1″	23.4″	23.6″	Polar Semidiameter . .	23.8″	23.8″	23.7″	23.5″
Horizontal Parallax . .	2.1	2.2	2.2	2.2	Horizontal Parallax . .	2.2	2.2	2.2	2.2

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	1 6 25.32	−1.077	+5 21 50.1	−6.15	10 19.6	1	0 57 51.07	−0.281	+4 36 48.1	−0.95	8 13.2
2	1 5 59.69	1.059	5 19 23.9	6.03	10 15.2	2	0 57 44.72	0.249	4 36 28.0	0.74	8 9.2
3	1 5 34.50	1.040	5 17 0.7	5.90	10 10.9	3	0 57 39.12	0.217	4 36 12.8	0.54	8 5.2
4	1 5 9.79	1.020	5 14 40.7	5.77	10 6.6	4	0 57 34.29	0.185	4 36 2.4	0.34	8 1.2
5	1 4 45.56	0.999	5 12 24.0	5.63	10 2.2	5	0 57 30.23	0.153	4 35 56.9	−0.13	7 57.2
6	1 4 21.83	−0.978	+5 10 10.6	−5.49	9 57.9	6	0 57 26.93	−0.121	+4 35 56.2	+0.07	7 53.2
7	1 3 58.61	0.956	5 8 0.7	5.34	9 53.6	7	0 57 24.40	0.089	4 36 0.5	0.27	7 49.2
8	1 3 35.93	0.934	5 5 54.3	5.19	9 49.3	8	0 57 22.65	0.057	4 36 9.5	0.48	7 45.3
9	1 3 13.79	0.911	5 3 51.6	5.04	9 45.0	9	0 57 21.66	−0.025	4 36 23.5	0.68	7 41.3
10	1 2 52.22	0.887	5 1 52.7	4.88	9 40.7	10	0 57 21.44	+0.007	4 36 42.3	0.89	7 37.4
11	1 2 31.22	−0.863	+4 59 57.5	−4.72	9 36.4	11	0 57 22.00	+0.039	+4 37 5.9	+1.09	7 33.5
12	1 2 10.81	0.838	4 58 6.3	4.55	9 32.2	12	0 57 23.32	0.072	4 37 34.4	1.29	7 29.6
13	1 1 51.01	0.812	4 56 19.1	4.38	9 27.9	13	0 57 25.42	0.104	4 38 7.7	1.49	7 25.7
14	1 1 31.83	0.786	4 54 35.9	4.21	9 23.7	14	0 57 28.30	0.136	4 38 45.9	1.69	7 21.8
15	1 1 13.28	0.759	4 52 56.9	4.04	9 19.4	15	0 57 31.94	0.168	4 39 28.9	1.89	7 18.0
16	1 0 55.37	−0.732	+4 51 22.1	−3.86	9 15.2	16	0 57 36.36	+0.200	+4 40 16.7	+2.09	7 14.1
17	1 0 38.13	0.705	4 49 51.7	3.68	9 11.0	17	0 57 41.54	0.232	4 41 9.3	2.29	7 10.2
18	1 0 21.55	0.677	4 48 25.6	3.50	9 6.8	18	0 57 47.49	0.264	4 42 6.7	2.49	7 6.4
19	1 0 5.65	0.648	4 47 3.9	3.31	9 2.6	19	0 57 54.20	0.296	4 43 8.8	2.69	7 2.6
20	0 59 50.45	0.619	4 45 46.8	3.12	8 58.4	20	0 58 1.68	0.327	4 44 15.6	2.88	6 58.8
21	0 59 35.94	−0.590	+4 44 34.2	−2.93	8 54.3	21	0 58 9.91	+0.359	+4 45 27.1	+3.08	6 55.0
22	0 59 22.15	0.560	4 43 26.2	2.74	8 50.1	22	0 58 18.90	0 390	4 46 43.3	3.28	6 51.2
23	0 59 9.07	0.530	4 42 22.9	2.54	8 46.0	23	0 58 28.64	0.421	4 48 4.2	3.47	6 47.5
24	0 58 56.72	0.500	4 41 24.3	2.35	8 41.9	24	0 58 39.12	0.452	4 49 29.6	3.66	6 43.7
25	0 58 45.11	0.469	4 40 30.4	2.15	8 37.7	25	0 58 50.34	0.483	4 50 59.5	3.85	6 39.9
26	0 58 34.23	−0.438	+4 39 41.3	−1.95	8 33.6	26	0 59 2.30	+0.513	+4 52 34.0	+4.03	6 36.2
27	0 58 24.09	0.407	4 38 57.0	1.75	8 29.5	27	0 59 14.99	0.544	4 54 12.9	4.22	6 32.5
28	0 58 14.71	0.376	4 38 17.6	1.55	8 25.4	28	0 59 28.40	0.574	4 55 56.2	4.40	6 28.8
29	0 58 6.08	0.344	4 37 42.9	1.35	8 21.4	29	0 59 42.53	0.604	4 57 43.9	4.58	6 25.1
30	0 57 58.20	0.313	4 37 13.1	1.15	8 17.3	30	0 59 57.37	0.633	4 59 35.9	4.76	6 21.4
31	0 57 51.07	−0.281	+4 36 48.1	−0.95	8 13.2	31	1 0 12.92	+0.662	+5 1 32.2	+4.94	6 17.8
32	0 57 44.72	−0.249	+4 36 28.0	−0.74	8 9.2	32	1 0 29.17	+0.691	+5 3 32.7	+5.11	6 14.1

Day of the Month.	7th.	15th.	23d.
Polar Semidiameter	23″.2	22″.8	22″.3
Horizontal Parallax	2.2	2.1	2.1

Day of the Month.	1st.	9th.	17th.	25th.	33d.
Polar Semidiameter . .	21″.8	21″.2	20″.7	20″.2	19″.6
Horizontal Parallax . .	2.0	2.0	1.9	1.9	1.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 3 54.49	+0.155	+2 1 18.7	−0.23	17 18.7
2	12 3 58.01	0.138	2 1 14.6	0.12	17 14.8
3	12 4 1.13	0.121	2 1 13.1	−0.01	17 10.9
4	12 4 3.85	0.104	2 1 14.2	+0.10	17 7.1
5	12 4 6.15	0.087	2 1 17.9	0.21	17 3.1
6	12 4 8.05	+0.071	+2 1 24.3	+0.32	16 59.2
7	12 4 9.55	0.054	2 1 33.3	0.43	16 55.3
8	12 4 10.64	0.037	2 1 44.8	0.54	16 51.4
9	12 4 11.33	0.020	2 1 59.0	0.65	16 47.4
10	12 4 11.62	+0.003	2 2 15.8	0.76	16 43.5
11	12 4 11.51	−0.013	+2 2 35.1	+0.86	16 39.6
12	12 4 11.01	0.030	2 2 57.0	0.97	16 35.6
13	12 4 10.10	0.047	2 3 21.4	1.08	16 31.7
14	12 4 8.79	0.063	2 3 48.3	1.19	16 27.7
15	12 4 7.08	0.080	2 4 17.8	1.29	16 23.8
16	12 4 4.98	−0.096	+2 4 49.8	+1.39	16 19.8
17	12 4 2.48	0.113	2 5 24.3	1.50	16 15.8
18	12 3 59.59	0.130	2 6 1.3	1.60	16 11 8
19	12 3 56.30	0.146	2 6 40.8	1.70	16 7.9
20	12 3 52.62	0.162	2 7 22.8	1.80	16 3.9
21	12 3 48.55	−0.178	+2 8 7.2	+1.90	15 59.9
22	12 3 44.08	0.194	2 8 54.0	2.00	15 55.8
23	12 3 39.22	0.210	2 9 43.2	2.10	15 51.8
24	12 3 33.99	0.226	2 10 34.9	2.20	15 47.8
25	12 3 28.37	0.242	2 11 28.9	2.30	15 43.8
26	12 3 22.37	−0.258	+2 12 25.2	+2.40	15 39.7
27	12 3 15.99	0.274	2 13 23.9	2.50	15 35.7
28	12 3 9.24	0.289	2 14 24.9	2.59	15 31.6
29	12 3 2.11	0.304	2 15 28.1	2.68	15 27.6
30	12 2 54.62	0.319	2 16 33.5	2.77	15 23.5
31	12 2 46.77	−0.334	+2 17 41.2	+2.86	15 19.5
32	12 2 38.56	−0.349	+2 18 51.0	+2.95	15 15.4

Day of the Month.	0th.	8th.	16th.	24th.
Polar Semidiameter . .	8″.5	8″.6	8″.7	8″.8
Horizontal Parallax . .	1.0	1.0	1.0	1.0

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 2 38.56	−0.349	+2 18 51.0	+2.95	15 15.4
2	12 2 30.00	0.364	2 20 2.9	3.04	15 11.3
3	12 2 21.08	0.379	2 21 16.9	3.13	15 7.2
4	12 2 11.83	0.393	2 22 33.0	3.21	15 3.1
5	12 2 2.24	0.407	2 23 51.0	3.29	14 59.1
6	12 1 52.32	−0.421	+2 25 11.0	+3.37	14 55.0
7	12 1 42.07	0.434	2 26 32.9	3.45	14 50.9
8	12 1 31.50	0.447	2 27 56.7	3.53	14 46.7
9	12 1 20.61	0.460	2 29 22.4	3.61	14 42.6
10	12 1 9.41	0.473	2 30 49.8	3.68	14 38.5
11	12 0 57.91	−0.485	+2 32 18.9	+3.75	14 34.4
12	12 0 46.11	0.497	2 33 49.7	3.82	14 30.2
13	12 0 34.02	0.509	2 35 22.3	3.89	14 26.1
14	12 0 21.64	0.521	2 36 56.4	3.96	14 22.0
15	12 0 8.98	0.533	2 38 32.0	4.02	14 17.8
16	11 59 56.05	−0.544	+2 40 9.1	+4.08	14 13.7
17	11 59 42.85	0.555	2 41 47.8	4.14	14 9.5
18	11 59 29.39	0.566	2 43 27.9	4.20	14 5.4
19	11 59 15.67	0.577	2 45 9.3	4.26	14 1.2
20	11 59 1.71	0.587	2 46 52.0	4.31	13 57.0
21	11 58 47.51	−0.597	+2 48 36.1	+4.36	13 52.9
22	11 58 33.08	0.606	2 50 21.3	4.41	13 48.7
23	11 58 18.42	0.615	2 52 7.7	4.46	13 44.5
24	11 58 3.54	0.624	2 53 55.1	4.50	13 40.4
25	11 57 48.46	0.633	2 55 43.7	4.54	13 36.2
26	11 57 33.18	−0.641	+2 57 33.2	+4.58	13 32.0
27	11 57 17.71	0.649	2 59 23.6	4.62	13 27.8
28	11 57 2.05	0.656	3 1 14.8	4.65	13 23.6
29	11 56 46.23	0.663	3 3 6.9	4.68	13 19.4
30	11 56 30.24	0.670	3 4 59.7	4.71	13 15.2
31	11 56 14.10	−0.676	+3 6 53.1	+4.73	13 11.0
32	11 55 57.81	−0.682	+3 8 47.1	+4.75	13 6.8

Day of the Month.	1st.	9th.	17th.	25th.
Polar Semidiameter . .	8″.9	9″.0	9″.1	9″.2
Horizontal Parallax . .	1.0	1.0	1.0	1.0

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	11 56 30.24	−0.670	+3 4 59.7	+4.71	13 15.2
2	11 56 14.10	0.676	3 6 53.1	4.73	13 11.0
3	11 55 57.81	0.682	3 8 47.1	4.75	13 6.8
4	11 55 41.39	0.687	3 10 41.7	4.77	13 2.6
5	11 55 24.84	0.692	3 12 36.8	4.79	12 58.4
6	11 55 8.18	−0.697	+3 14 32.1	+4.81	12 54.2
7	11 54 51.41	0.701	3 16 27.9	4.82	12 50.0
8	11 54 34.54	0.705	3 18 23.9	4.83	12 45.7
9	11 54 17.59	0.708	3 20 20.2	4.84	12 41.5
10	11 54 0.55	0.711	3 22 16.5	4.84	12 37.3
11	11 53 43.45	−0.714	+3 24 12.9	+4.85	12 33.1
12	11 53 26.29	0.716	3 26 9.5	4.85	12 28.9
13	11 53 9.07	0.718	3 28 6.0	4.85	12 24.7
14	11 52 51.81	0.720	3 30 2.3	4.84	12 20.4
15	11 52 34.52	0.721	3 31 58.4	4.84	12 16.2
16	11 52 17.21	−0.722	+3 33 54.4	+4.83	12 12.0
17	11 51 59.88	0.723	3 35 50.1	4.82	12 7.8
18	11 51 42.54	0.723	3 37 45.5	4.81	12 3.6
19	11 51 25.22	0.722	3 39 40.5	4.79	11 59.3
20	11 51 7.89	0.721	3 41 35.0	4.77	11 55.1
21	11 50 50.59	−0.720	+3 43 29.0	+4.75	11 50.9
22	11 50 33.33	0.718	3 45 22.4	4.72	11 46.7
23	11 50 16.10	0.716	3 47 15.1	4.69	11 42.4
24	11 49 58.93	0.714	3 49 7.2	4.66	11 38.2
25	11 49 41.82	0.712	3 50 58.5	4.63	11 34.0
26	11 49 24.78	−0.709	+3 52 49.0	+4.59	11 29.8
27	11 49 7.82	0.705	3 54 38.6	4.55	11 25.6
28	11 48 50.94	0.701	3 56 27.3	4.51	11 21.4
29	11 48 34.17	0.697	3 58 14.9	4.47	11 17.2
30	11 48 17.51	0.692	4 0 1.5	4.42	11 13.0
31	11 48 0.97	−0.687	+4 1 46.9	+4.37	11 8.7
32	11 47 44.55	−0.681	+4 3 31.2	+4.32	11 4.6

Day of the Month.	4th.	12th.	20th.	28th.
	″	″	″	″
Polar Semidiameter . .	9.2	9.2	9.2	9.2
Horizontal Parallax . .	1.0	1.0	1.0	1.0

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	11 47 44.55	−0.681	+4 3 31.2	+4.32	11 4.6
2	11 47 28.27	0.675	4 5 14.2	4.27	11 0.4
3	11 47 12.14	0.669	4 6 55.9	4.21	10 56.2
4	11 46 56.16	0.663	4 8 36.3	4.15	10 52.0
5	11 46 40.35	0.656	4 10 15.3	4.09	10 47.8
6	11 46 24.70	−0.649	+4 11 52.8	+4.03	10 43.6
7	11 46 9.24	0.641	4 13 28.8	3.97	10 39.4
8	11 45 53.96	0.633	4 15 3.3	3.90	10 35.2
9	11 45 38.87	0.625	4 16 36.2	3.83	10 31.0
10	11 45 23.99	0.616	4 18 7.5	3.76	10 26.8
11	11 45 9.31	−0.607	+4 19 37.1	+3.69	10 22.7
12	11 44 54.84	0.598	4 21 5.0	3.62	10 18.5
13	11 44 40.60	0.589	4 22 31.2	3.55	10 14.3
14	11 44 26.58	0.579	4 23 55.6	3.48	10 10.2
15	11 44 12.80	0.569	4 25 18.2	3.40	10 6.0
16	11 43 59.26	−0.559	+4 26 38.9	+3.32	10 1.9
17	11 43 45.98	0.548	4 27 57.7	3.24	9 57.7
18	11 43 32.94	0.537	4 29 14.6	3.16	9 53.6
19	11 43 20.17	0.526	4 30 29.5	3.08	9 49.4
20	11 43 7.66	0.515	4 31 42.5	3.00	9 45.3
21	11 42 55.43	−0.503	+4 32 53.4	+2.91	9 41.2
22	11 42 43.48	0.491	4 34 2.2	2.83	9 37.0
23	11 42 31.81	0.479	4 35 9.0	2.74	9 32.9
24	11 42 20.44	0.467	4 36 13.6	2.65	9 28.8
25	11 42 9.36	0.455	4 37 16.0	2.56	9 24.7
26	11 41 58.59	−0.442	+4 38 16.2	+2.47	9 20.6
27	11 41 48.13	0.429	4 39 14.2	2.37	9 16.5
28	11 41 37.98	0.416	4 40 9.9	2.28	9 12.4
29	11 41 28.16	0.403	4 41 3.4	2.18	9 8.3
30	11 41 18.65	0.389	4 41 54.6	2.08	9 4.2
31	11 41 9.48	−0.375	+4 42 43.4	+1.99	9 0.1
32	11 41 0.64	−0.361	+4 43 29.9	+1.89	8 56.0

Day of the Month.	5th.	13th.	21st.	29th.
	″	″	″	″
Polar Semidiameter . .	9.2	9.1	9.0	8.9
Horizontal Parallax . .	1.0	1.0	1.0	1.0

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	11 41 9.48	−0.375	+4 42 43.4	+1.99	9 0.1
2	11 41 0.64	0.361	4 43 29.9	1.89	8 56.0
3	11 40 52.13	0.347	4 44 14.0	1.79	8 52.0
4	11 40 43.96	0.333	4 44 55.8	1.69	8 47.9
5	11 40 36.13	0.319	4 45 35.1	1.59	8 43.8
6	11 40 28.65	−0.305	+4 46 12.1	+1.49	8 39.8
7	11 40 21.52	0.290	4 46 46.7	1.39	8 35.7
8	11 40 14.74	0.275	4 47 18.8	1.29	8 31.7
9	11 40 8.31	0.260	4 47 48.5	1.19	8 27.7
10	11 40 2.24	0.245	4 48 15.7	1.08	8 23.6
11	11 39 56.52	−0.230	+4 48 40.5	+0.98	8 19.6
12	11 39 51.17	0.215	4 49 2.8	0.88	8 15.6
13	11 39 46.17	0.200	4 49 22.7	0.78	8 11.6
14	11 39 41.54	0.185	4 49 40.1	0.67	8 7.6
15	11 39 37.27	0.170	4 49 55.1	0.57	8 3.6
16	11 39 33.37	−0.155	+4 50 7.6	+0.47	7 59.6
17	11 39 29.84	0.140	4 50 17.6	0.37	7 55.6
18	11 39 26.68	0.124	4 50 25.2	0.26	7 51.6
19	11 39 23.89	0.109	4 50 30.2	0.16	7 47.6
20	11 39 21.47	0.093	4 50 32.8	+0.05	7 43.7
21	11 39 19.43	−0.078	+4 50 32.8	−0.05	7 39.8
22	11 39 17.76	0.062	4 50 30.4	0.16	7 35.8
23	11 39 16.47	0.046	4 50 25.4	0.26	7 31.8
24	11 39 15.57	0.030	4 50 18.0	0.37	7 27.9
25	11 39 15.04	−0.014	4 50 8.0	0.47	7 23.9
26	11 39 14.89	+0.002	+4 49 55.6	−0.57	7 20.0
27	11 39 15.11	0.018	4 49 40.6	0.68	7 16.1
28	11 39 15.72	0.033	4 49 23.2	0.78	7 12.1
29	11 39 16.71	0.049	4 49 3.3	0.89	7 8.2
30	11 39 18.08	0.065	4 48 40 9	0.99	7 4.3
31	11 39 19.83	+0.081	+4 48 16.0	−1.09	7 0.4
32	11 39 21.95	+0.097	+4 47 48.6	−1.19	6 56.5

Day of the Month.	7th.	15th.	23d.	31st.
Polar Semidiameter .	8″.8	8″.7	8″.6	8″.5
Horizontal Parallax	1.0	1.0	1.0	1.0

JUNE.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	11 39 21.95	+0.097	+4 47 48.6	−1.19	6 56.5
2	11 39 24.45	0.112	4 47 18.8	1.29	6 52.6
3	11 39 27 33	0.128	4 46 46.6	1.39	6 48.7
4	11 39 30.58	0.143	4 46 11.9	1.49	6 44.9
5	11 39 34.21	0.159	4 45 34.8	1.59	6 41.0
6	11 39 38.20	+0.174	+4 44 55.4	−1.69	6 37.1
7	11 39 42.57	0.190	4 44 13.6	1.79	6 33.3
8	11 39 47.30	0.205	4 43 29.4	1.89	6 29.4
9	11 39 52.40	0.220	4 42 42.8	1.99	6 25.6
10	11 39 57.87	0.235	4 41 53.9	2.09	6 21.7
11	11 40 3.70	+0.250	+4 41 2.7	−2.19	6 17.9
12	11 40 9.89	0.965	4 40 9.2	2 29	6 14.1
13	11 40 16.44	0.280	4 39 13.4	2.38	6 10.3
14	11 40 23.35	0 295	4 38 15.3	2.47	6 6.4
15	11 40 30.62	0.310	4 37 15.0	2.57	6 2.6
16	11 40 38.24	+0.325	+4 36 12.4	−2.66	5 58.8
17	11 40 46.22	0.340	4 35 7.5	2.75	5 55.0
18	11 40 54.55	0.355	4 34 0.4	2.84	5 51.2
19	11 41 3.23	0.369	4 32 51.1	2.93	5 47.5
20	11 41 12.26	0.384	4 31 39.6	3.02	5 43.7
21	11 41 21.64	+0.398	+4 30 26.0	−3.11	5 39.9
22	11 41 31.36	0.413	4 29 10.2	3.20	5 36.1
23	11 41 41.43	0.427	4 27 52.2	3.29	5 32.3
24	11 41 51.83	0.441	4 26 32.0	3.38	5 28.6
25	11 42 2.58	0.455	4 25 9.7	3.47	5 24.8
26	11 42 13.66	+0.469	+4 23 45.4	−3 56	5 21.1
27	11 42 25.07	0.483	4 22 19.0	3.65	5 17.3
28	11 42 36.82	0.496	4 20 50.5	3.73	5 13.6
29	11 42 48.89	0.509	4 19 19.9	3.81	5 9.8
30	11 43 1.28	0.523	4 17 47.4	3.90	5 6.1
31	11 43 13.99	+0.536	+4 16 12.9	−3.98	5 2.4
32	11 43 27.02	+0.549	+4 14 36.4	−4.06	4 58.7

Day of the Month.	8th.	16th.	24th.	32d.
Polar Semidiameter . .	8″.4	8″.2	8″.1	8″.0
Horizontal Parallax . .	0.9	0 9	0.9	0.9

NOTE. The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	11 43 13.99	+0.536	+4 16 12.9	−3.98	5 2.4	1	11 52 9.35	+0.881	+3 13 2.0	−6.06	3 9.4
2	11 43 27.02	0.549	4 14 36.4	4.06	4 58.7	2	11 52 30.59	0.890	3 10 36.0	6.11	3 5.8
3	11 43 40.36	0.562	4 12 58.0	4.14	4 55.0	3	11 52 52.06	0.899	3 8 8.7	6.16	3 2.3
4	11 43 54.01	0.575	4 11 17.7	4.22	4 51.3	4	11 53 13.72	0.907	3 5 40.2	6.21	2 58.7
5	11 44 7.97	0.588	4 9 35.5	4.30	4 47.6	5	11 53 35.59	0.915	3 3 10.6	6.26	2 55.1
6	11 44 22.23	+0.601	+4 7 51.4	−4.38	4 43.9	6	11 53 57.65	+0.923	+3 0 39.9	−6.31	2 51.5
7	11 44 36.80	0.613	4 6 5.5	4.46	4 40.2	7	11 54 19.90	0.931	2 58 8.0	6.35	2 48.0
8	11 44 51.65	0.625	4 4 17.8	4.53	4 36.5	8	11 54 42.35	0.939	2 55 35.1	6.39	2 44.4
9	11 45 6.80	0.637	4 2 28.3	4.60	4 32.8	9	11 55 4.98	0.947	2 53 1.1	6.44	2 40.9
10	11 45 22.25	0.649	4 0 37.0	4.68	4 29.2	10	11 55 27.80	0.955	2 50 26.1	6.48	2 37.3
11	11 45 37.98	+0.661	+3 58 43.9	−4.75	4 25.5	11	11 55 50.80	+0.962	+2 47 50.0	−6.52	2 33.8
12	11 45 53.99	0.673	3 56 49.1	4.82	4 21.8	12	11 56 13.97	0.969	2 45 12.9	6.56	2 30.2
13	11 46 10.29	0.685	3 54 52.6	4.89	4 18.1	13	11 56 37.32	0.976	2 42 34.9	6.60	2 26.7
14	11 46 26.87	0.697	3 52 54.4	4.96	4 14.5	14	11 57 0.84	0.983	2 39 55.9	6.64	2 23.1
15	11 46 43.72	0.709	3 50 54.5	5.03	4 10.9	15	11 57 24.53	0.990	2 37 16.0	6.68	2 19.6
16	11 47 0.85	+0.720	+3 48 53.0	−5.10	4 7.2	16	11 57 48.39	+0.997	+2 34 35.1	−6.72	2 16.0
17	11 47 18.24	0.731	3 46 49.9	5.17	4 3.6	17	11 58 12.41	1.004	2 31 53.4	6.76	2 12.5
18	11 47 35.90	0.742	3 44 45.1	5.24	4 0.0	18	11 58 36.58	1.010	2 29 10.9	6.79	2 9.0
19	11 47 53.83	0.753	3 42 38.8	5.30	3 56.4	19	11 59 0.91	1.016	2 26 27.5	6.83	2 5.5
20	11 48 12.02	0.764	3 40 30.9	5.37	3 52.8	20	11 59 25.38	1.022	2 23 43.3	6.86	2 1.9
21	11 48 30.46	+0.775	+3 38 21.4	−5.43	3 49.1	21	11 59 49.99	+1.028	+2 20 58.3	−6.89	1 58.4
22	11 48 49.16	0.785	3 36 10.4	5.49	3 45.5	22	12 0 14.75	1.034	2 18 12.6	6.92	1 54.9
23	11 49 8.12	0.795	3 33 57.9	5.55	3 41.9	23	12 0 39.65	1.040	2 15 26.1	6.95	1 51.4
24	11 49 27.31	0.805	3 31 43.9	5.61	3 38.3	24	12 1 4.68	1.046	2 12 39.0	6.98	1 47.9
25	11 49 46.75	0.815	3 29 28.5	5.67	3 34.7	25	12 1 29.84	1.051	2 9 51.2	7.01	1 44.4
26	11 50 6.43	+0.825	+3 27 11.6	−5.73	3 31.0	26	12 1 55.13	+1.056	+2 7 2.7	−7.04	1 40.9
27	11 50 26.36	0.835	3 24 53.3	5.79	3 27.4	27	12 2 20.54	1.061	2 4 13.6	7.06	1 37.4
28	11 50 46.51	0.845	3 22 33.7	5.85	3 23.8	28	12 2 46.07	1.066	2 1 23.9	7.08	1 33.9
29	11 51 6.88	0.854	3 20 12.8	5.90	3 20.2	29	12 3 11.71	1.071	1 58 33.7	7.10	1 30.4
30	11 51 27.49	0.863	3 17 50.5	5.96	3 16.6	30	12 3 37.45	1.075	1 55 43.0	7.12	1 26.9
31	11 51 48.31	+0.872	+3 15 26.9	−6.01	3 13.0	31	12 4 3.31	+1.079	+1 52 51.7	−7.14	1 23.4
32	11 52 9.35	+0.881	+3 13 2.0	−6.06	3 9.4	32	12 4 29.27	+1.083	+1 50 0.0	−7.16	1 19.9

Day of the Month.	2d.	10th.	18th.	26th.	Day of the Month.	3d.	11th.	19th.	27th.
Polar Semidiameter . .	8.″0	7.″9	7.″8	7.″7	Polar Semidiameter . .	7.″7	7.″6	7.″6	7.″5
Horizontal Parallax . .	0.9	0.9	0.9	0.9	Horizontal Parallax . .	0.9	0.9	0.9	0.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	12 4 29.27	+1.083	+1 50 0.0	−7.16	1 19.9
2	12 4 55.32	1.087	1 47 7.9	7.18	1 16.4
3	12 5 21.47	1.091	1 44 15.3	7.20	1 12.9
4	12 5 47.71	1.095	1 41 22.3	7.22	1 9.4
5	12 6 14.03	1.099	1 38 29.0	7.24	1 5.9
6	12 6 40.44	+1.102	+1 35 35.3	−7.25	1 2.4
7	12 7 6.92	1.105	1 32 41.3	7.26	0 58.9
8	12 7 33.49	1.108	1 29 46.9	7.27	0 55.4
9	12 8 0.13	1.111	1 26 52.3	7.28	0 51.9
10	12 8 26.83	1.114	1 23 57.5	7.29	0 48.4
11	12 8 53.60	+1.117	+1 21 2.4	−7.30	0 44.9
12	12 9 20.44	1.119	1 18 7.1	7.31	0 41.4
13	12 9 47.33	1.121	1 15 11.7	7.31	0 37.9
14	12 10 14.28	1.123	1 12 16.1	7.32	0 34.4
15	12 10 41.28	1.125	1 9 20.3	7.32	0 30.9
16	12 11 8.33	+1.127	+1 6 24.4	−7.32	0 27.5
17	12 11 35.43	1.129	1 3 28.4	7.33	0 24.0
18	12 12 2.56	1.131	1 0 32.4	7.33	0 20.5
19	12 12 29.72	1.133	0 57 36.4	7.33	0 17.1
20	12 12 56.93	1.134	0 54 40.4	7.33	0 13.6
21	12 13 24.16	+1.135	+0 51 44.4	−7.33	0 10.2
22	12 13 51.41	1.136	0 48 48.5	7.33	0 6.7
23	12 14 18.67	1.136	0 45 52.7	7.32	0 3.2 23 59.7
24	12 14 45.96	1.136	0 42 57.0	7.32	23 56.2
25	12 15 13.25	1.137	0 40 1.4	7.31	23 52.7
26	12 15 40.55	+1.137	+0 37 6.1	−7.30	23 49.2
27	12 16 7.85	1.137	0 34 11.0	7.29	23 45.7
28	12 16 35.15	1.137	0 31 16.1	7.28	23 42.2
29	12 17 2.44	1.136	0 28 21.4	7.27	23 38.7
30	12 17 29.72	1.136	0 25 27.1	7.26	23 35.2
31	12 17 56.98	+1.135	+0 22 33.1	−7.25	23 31.8
32	12 18 24.23	+1.135	+0 19 39.4	−7.23	23 28.3

Day of the Month.	4th.	12th.	20th.	28th.
	″	″	″	″
Polar Semidiameter . .	7.5	7.4	7.4	7.4
Horizontal Parallax . .	0.8	0.8	0.8	0.8

OCTOBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	12 17 56.98	+1.135	+0 22 33.1	−7.25	23 31.8
2	12 18 24.23	1.135	0 19 39.4	7.23	23 28.3
3	12 18 51.46	1.134	0 16 46.1	7.22	23 24.8
4	12 19 18.65	1.133	0 13 53.2	7.20	23 21.3
5	12 19 45.82	1.132	0 11 0.8	7.18	23 17.9
6	12 20 12.96	+1.130	+0 8 8.7	−7.16	23 14.4
7	12 20 40.06	1.128	0 5 17.2	7.14	23 10.9
8	12 21 7.12	1.126	+0 2 26.1	7.12	23 7.4
9	12 21 34.14	1.124	−0 0 24.4	7.10	23 4.0
10	12 22 1.11	1.122	0 3 14.4	7.08	23 0.5
11	12 22 28.03	+1.120	−0 6 3.9	−7.05	22 57.0
12	12 22 54.89	1.118	0 8 52.7	7.02	22 53.5
13	12 23 21.69	1.115	0 11 40.9	7.00	22 50.0
14	12 23 48.43	1.112	0 14 28.5	6.97	22 46.5
15	12 24 15.10	1.109	0 17 15.5	6.94	22 43.0
16	12 24 41.70	+1.106	−0 20 1.7	−6.91	22 39.5
17	12 25 8.22	1.103	0 22 47.2	6.88	22 36.0
18	12 25 34.66	1.100	0 25 31.8	6.85	22 32.5
19	12 26 1.02	1.096	0 28 15.7	6.82	22 29.0
20	12 26 27.28	1.092	0 30 58.8	6.78	22 25.5
21	12 26 53.45	+1.088	−0 33 41.0	−6.74	22 22.0
22	12 27 19.52	1.084	0 36 22.3	6.70	22 18.5
23	12 27 45.49	1.080	0 39 2.7	6.66	22 15.0
24	12 28 11.34	1.075	0 41 42.2	6.62	22 11.5
25	12 28 37.08	1.070	0 44 20.7	6.58	22 8.0
26	12 29 2.71	+1.065	−0 46 58.2	−6.54	22 4.5
27	12 29 28.22	1.060	0 49 34.6	6.50	22 1.0
28	12 29 53.59	1.055	0 52 10.0	6.46	21 57.5
29	12 30 18.84	1.050	0 54 44.3	6.41	21 54.0
30	12 30 43.95	1.044	0 57 17.5	6.36	21 50.5
31	12 31 8.93	+1.038	−0 59 49.6	−6.31	21 47.0
32	12 31 33.76	+1.032	−1 2 20.5	−6.26	21 43.5

Day of the Month.	6th.	14th.	22d.	30th.
	″	″	″	″
Polar Semidiameter . .	7.4	7.4	7.5	7.5
Horizontal Parallax . .	0.8	0.8	0.8	0.9

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 31 33.76	+1.032	−1 2 20.5	−6.26	21 43.5
2	12 31 58.45	1.026	1 4 50.2	6.21	21 39.9
3	12 32 22.99	1.020	1 7 18.8	6.16	21 36.4
4	12 32 47.37	1.013	1 9 46.1	6.11	21 32.9
5	12 33 11.60	1.006	1 12 12.1	6.06	21 29.4
6	12 33 35.66	+0.999	−1 14 36.9	−6.00	21 25.8
7	12 33 59.56	0.992	1 17 0.4	5.95	21 22.3
8	12 34 23.29	0.985	1 19 22.5	5.90	21 18.7
9	12 34 46.84	0.978	1 21 43.3	5.84	21 15.2
10	12 35 10.22	0.971	1 24 2.6	5.78	21 11.6
11	12 35 33.42	+0.963	−1 26 20.6	−5.72	21 8.1
12	12 35 56.43	0.955	1 28 37.2	5.66	21 4.5
13	12 36 19.24	0.947	1 30 52.3	5.60	21 1.0
14	12 36 41.85	0.939	1 33 5.9	5.54	20 57.4
15	12 37 4.28	0.930	1 35 18.0	5.48	20 53.9
16	12 37 26.49	+0.921	−1 37 28.6	−5.41	20 50.3
17	12 37 48.49	0.912	1 39 37.5	5.34	20 46.7
18	12 38 10.27	0.903	1 41 44.8	5.27	20 43.1
19	12 38 31.84	0.894	1 43 50.6	5.20	20 39.6
20	12 38 53.19	0.885	1 45 54.6	5.13	20 36.0
21	12 39 14.30	+0.875	−1 47 57.0	−5.06	20 32.4
22	12 39 35.17	0.865	1 49 57.6	4.99	20 28.8
23	12 39 55.82	0.855	1 51 56.6	4.92	20 25.2
24	12 40 16.22	0.845	1 53 53.7	4.85	20 21.6
25	12 40 36.37	0.835	1 55 49.0	4.77	20 18.0
26	12 40 56.27	+0.824	−1 57 42.5	−4.69	20 14.4
27	12 41 15.92	0.813	1 59 34.2	4.62	20 10.8
28	12 41 35.31	0.802	2 1 24.1	4.54	20 7.2
29	12 41 54.44	0.791	2 3 12.0	4.46	20 3.6
30	12 42 13.30	0.780	2 4 58.1	4.38	19 59.9
31	12 42 31.89	+0.769	−2 6 42.2	−4.30	19 56.3
32	12 42 50.21	+0.758	−2 8 24.4	−4.22	19 52.7

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 42 31.89	+0.769	−2 6 42.2	−4.30	19 56.3
2	12 42 50.21	0.758	2 8 24.4	4.22	19 52.7
3	12 43 8.25	0.746	2 10 4.7	4.14	19 49.1
4	12 43 26.02	0.734	2 11 42.9	4.06	19 45.4
5	12 43 43.50	0.722	2 13 19.2	3.97	19 41.8
6	12 44 0.69	+0.710	−2 14 53.5	−3.88	19 38.1
7	12 44 17.58	0.698	2 16 25.7	3.80	19 34.5
8	12 44 34.18	0.686	2 17 55.8	3.72	19 30.8
9	12 44 50.49	0.673	2 19 23.9	3.63	19 27.2
10	12 45 6.49	0.660	2 20 49.9	3.54	19 23.5
11	12 45 22.18	+0.647	−2 22 13.7	−3.45	19 19.8
12	12 45 37.56	0.634	2 23 35.4	3.36	19 16.1
13	12 45 52.62	0.621	2 24 54.9	3.27	19 12.4
14	12 46 7.36	0.608	2 26 12.2	3.18	19 8.7
15	12 46 21.78	0.594	2 27 27.3	3.09	19 5.0
16	12 46 35.87	+0.580	−2 28 40.2	−2.99	19 1.3
17	12 46 49.63	0.566	2 29 50.8	2.90	18 57.6
18	12 47 3.05	0.552	2 30 59.2	2.81	18 53.9
19	12 47 16.12	0.538	2 32 5.2	2.71	18 50.1
20	12 47 28.86	0.524	2 33 8.9	2.61	18 46.4
21	12 47 41.26	+0.509	−2 34 10.3	−2.51	18 42.6
22	12 47 53.29	0.495	2 35 9.3	2.41	18 38.9
23	12 48 4.98	0.480	2 36 5.9	2.31	18 35.2
24	12 48 16.31	0.465	2 37 0.2	2.21	18 31.5
25	12 48 27.29	0.450	2 37 52.1	2.11	18 27.7
26	12 48 37.90	+0.435	−2 38 41.6	−2.01	18 23.9
27	12 48 48.15	0.420	2 39 28.7	1.91	18 20.2
28	12 48 58.03	0.405	2 40 13.4	1.81	18 16.4
29	12 49 7.55	0.390	2 40 55.7	1.71	18 12.6
30	12 49 16.69	0.374	2 41 35.5	1.61	18 8.8
31	12 49 25.47	+0.358	−2 42 12.9	−1.51	18 5.1
32	12 49 33.87	+0.342	−2 42 47.9	−1.41	18 1.3

Day of the Month.	7th.	15th.	23d.
Polar Semidiameter	7″.6	7″.6	7″.7
Horizontal Parallax	0.9	0.9	0.9

Day of the Month.	1st.	9th.	17th.	25th.	33d.
Polar Semidiameter . .	7″.8	7″.9	8″.0	8″.1	8″.2
Horizontal Parallax . .	0.9	0.9	0.9	0.9	0.9

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.	Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
Jan. 0	14 12 53.90	+8.249	−12 50 51.3	−41.54	19 31.3	July 2	13 59 58.64	− 1.507	−11 42 48.7	+ 5.99	7 14.8
4	14 13 25.43	7.512	12 53 29.7	37.60	19 16.1	6	13 59 54.19	− 0.717	11 42 33.3	+ 1.70	6 59.0
8	14 13 53.96	6.748	12 55 52.0	33.55	19 0.8	10	13 59 52.91	+ 0.078	11 42 35.2	− 2.62	6 43.3
12	14 14 19.39	5.962	12 57 58.0	29.43	18 45.5	14	13 59 54.82	0.878	11 42 54.3	6.93	6 27.6
16	14 14 41.63	5.156	12 59 47.3	25.23	18 30.1	18	13 59 59.94	1.688	11 43 30.6	11.26	6 12.0
20	14 15 0.61	+4.330	−13 1 19.7	−20.94	18 14.7	22	14 0 8.27	+ 2.485	−11 44 24.3	−15.59	5 56.4
24	14 15 16.25	3.484	13 2 34.7	16.57	17 59.2	26	14 0 19.82	3.286	11 45 35.3	19.80	5 40.9
28	14 15 28.47	2.624	13 3 32.1	12.14	17 43.7	30	14 0 34.55	4.076	11 47 3.3	24.11	5 25.4
Feb. 1	14 15 37.23	1.756	13 4 11.8	7.69	17 28.1	Aug. 3	14 0 52.41	4.851	11 48 48.0	28.22	5 9.9
5	14 15 42.52	0.888	13 4 33.7	− 3.26	17 12.5	7	14 1 13.33	5.607	11 50 48.9	32.21	4 54.5
9	14 15 44.34	+0.026	−13 4 37.9	+ 1.13	16 56.8	11	14 1 37.24	+ 6.346	−11 53 5.6	−36.10	4 39.2
13	14 15 42.73	−0.826	13 4 24.7	5.46	16 41.0	15	14 2 4.08	7.070	11 55 37.6	39.87	4 23.9
17	14 15 37.74	1.668	13 3 54.3	9.73	16 25.2	19	14 2 33.77	7.773	11 58 24.3	43.52	4 8.7
21	14 15 29.40	2.499	13 3 7.0	13.94	16 9.3	23	14 3 6.24	8.454	12 1 25.5	47.04	3 53.5
25	14 15 17.77	3.311	13 2 2.9	18.05	15 53.4	27	14 3 41.37	9.107	12 4 40.4	50.36	3 38.4
29	14 15 2.95	−4.094	−13 0 42.8	+22.02	15 37.4	31	14 4 19.05	+ 9.727	−12 8 8.2	−53.49	3 23.3
Mar. 4	14 14 45.07	4.842	12 59 7.0	25.82	15 21.3	Sept. 4	14 4 59.14	10.313	12 11 48.0	56.41	3 6.2
8	14 14 24.27	5.551	12 57 16.5	29.40	15 5.3	8	14 5 41.51	10.869	12 15 39.2	59.14	2 53.2
12	14 14 0.72	6.217	12 55 12.1	32.78	14 49.1	12	14 6 26.05	11.394	12 19 40.9	61.69	2 38.2
16	14 13 34.59	6.838	12 52 54.5	35.93	14 33.0	16	14 7 12.62	11.888	12 23 52.5	64.05	2 23.3
20	14 13 6.07	−7.415	−12 50 24.9	+38.85	14 16.8	20	14 8 1.10	+12.344	−12 28 13.1	−66.21	2 8.3
24	14 12 35.34	7.940	12 47 44.0	41.54	14 0.6	24	14 8 51.32	12.761	12 32 41.8	68.12	1 53.4
28	14 12 2.63	8.408	12 44 53.0	43.93	13 44.3	28	14 9 43.13	13.135	12 37 17.7	69.78	1 38.6
Apr. 1	14 11 28.17	8.811	12 41 53.0	45.98	13 28.0	Oct. 2	14 10 36.35	13.467	12 41 59.7	71.19	1 23.7
5	14 10 52.22	9.148	12 38 45.5	47.72	13 11.7	6	14 11 30.81	13.757	12 46 46.9	72.38	1 8.9
9	14 10 15.07	−9.420	−12 35 31.7	+49.11	12 55.3	10	14 12 26.35	+14.008	−12 51 38.4	−73.36	0 54.1
13	14 9 36.95	9.628	12 32 13.1	50.16	12 38.9	14	14 13 22.82	14.219	12 56 33.5	74.11	0 39.3
17	14 8 58.13	9.772	12 28 50.9	50.89	12 22.6	18	14 14 20.04	14.386	13 1 31.0	74.62	0 24.5
21	14 8 18.86	9.850	12 25 26.5	51.28	12 6.2	22	14 15 17.83	14.504	13 6 30.1	74.87	0 9.8
25	14 7 39.42	9.859	12 22 1.1	51.32	11 49.8	26	14 16 16.00	14.573	13 11 29.6	74.86	23 51.3
29	14 7 0.09	−9.795	−12 18 36.4	+50.96	11 33.4	30	14 17 14.35	+14.594	−13 16 28.6	−74.60	23 36.5
May 3	14 6 21.15	9.661	12 15 13.9	50.23	11 17.0	Nov. 3	14 18 12.69	14.569	13 21 26.1	74.11	23 21.8
7	14 5 42.88	9.462	12 11 55.1	49.15	11 0.7	7	14 19 10.85	14.500	13 26 21.2	73.41	23 7.0
11	14 5 5.53	9.204	12 8 41.2	47.75	10 44.3	11	14 20 8.63	14.386	13 31 13.1	72.48	22 52.2
15	14 4 29.33	8.888	12 5 33.5	46.04	10 28.0	15	14 21 5.87	14.224	13 36 0.7	71.31	22 37.5
19	14 3 54.51	−8.514	−12 2 33.3	+44.03	10 11.7	19	14 22 2.36	+14.012	−13 40 43.3	−69.91	22 22.7
23	14 3 21.29	8.083	11 59 41.7	41.70	9 55.4	23	14 22 57.90	13.748	13 45 19.7	68.25	22 7.8
27	14 2 49.92	7.595	11 57 0.0	39.07	9 39.2	27	14 23 52.28	13.435	13 49 49.0	66.37	21 53.0
31	14 2 20.60	7.057	11 54 29.5	36.14	9 23.0	Dec. 1	14 24 45.32	13.077	13 54 10.4	64.29	21 38.2
June 4	14 1 53.52	6.474	11 52 11.3	32.97	9 6.8	5	14 25 36.84	12.676	13 58 23.1	62.02	21 23.3
8	14 1 28.85	−5.854	−11 50 6.1	+29.60	8 50.7	9	14 26 26.67	+12.232	−14 2 26.3	−59.56	21 8.4
12	14 1 6.73	5.201	11 48 14.7	26.06	8 34.6	13	14 27 14.64	11.743	14 6 19.3	56.90	20 53.4
16	14 0 47.29	4.516	11 46 37.8	22.34	8 18.6	17	14 28 0.55	11.207	14 10 1.3	54.04	20 38.5
20	14 0 30.65	3.800	11 45 16.2	18.45	8 2.6	21	14 28 44.23	10.626	14 13 31.4	50.98	20 23.5
24	14 0 16.93	3.055	11 44 10.4	14.40	7 46.6	25	14 29 25.50	10.003	14 16 48.9	47.76	20 8.4
28	14 0 6.24	−2.289	−11 43 21.1	+10.23	7 30.7	29	14 30 4.21	+ 9.346	−14 19 53.3	−44.39	19 53.3
July 2	13 59 58.64	−1.507	−11 42 48.7	+ 5.99	7 14.8	33	14 30 40.22	+ 8.655	−14 22 43.9	−40.89	19 38.2

Greatest horizontal parallax,	April 25, 0″.50.	Greatest semidiameter,	April 25, 1″.91.
Least horizontal parallax,	October 29, 0″.45.	Least semidiameter,	October 29, 1″.72.

GREENWICH MEAN TIME.

Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination	Var. of Decl. for 1 Day.	Meridian Passage.	Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
Jan. 0	4 21 4.34	−5.765	+19 51 25.6	−11.50	9 40.9	July 2	4 34 14.23	+8.388	+20 27 11.1	+16.11	21 46.8
4	4 20 41.99	5.402	19 50 41.7	10.45	9 24.8	6	4 34 47.25	8.117	20 28 13.9	15.27	21 31.6
8	4 20 21.17	5.006	19 50 2.1	9.36	9 8.8	10	4 35 19.13	7.819	20 29 13.2	14.40	21 16.4
12	4 20 1.98	4.579	19 49 26.9	8.20	8 52.7	14	4 35 49.77	7.495	20 30 9.1	13.52	21 1.2
16	4 19 44.57	4.124	19 48 56.6	6.96	8 36.7	18	4 36 19.06	7.145	20 31 1.3	12.57	20 45.9
20	4 19 29.02	−3.645	+19 48 31.3	− 5.67	8 20.7	22	4 36 46.91	+6.769	+20 31 49.6	+11.58	20 30.7
24	4 19 15.44	3.141	19 48 11.3	4.32	8 4.8	26	4 37 13.18	6.365	20 32 33.9	10.57	20 15.4
28	4 19 3.92	2.612	19 47 56.7	2.97	7 48.9	30	4 37 37.80	5.937	20 33 14.1	9.53	20 0.1
Feb. 1	4 18 54.57	2.066	19 47 47.6	1 57	7 33.0	Aug. 3	4 38 0.66	5.489	20 33 50.1	8.49	19 44.7
5	4 18 47.41	1.509	19 47 44.2	− 0.11	7 17.2	7	4 38 21.69	5.023	20 34 22.0	7.43	19 29.3
9	4 18 42.52	−0.941	+19 47 46.7	+ 1.33	7 1.4	11	4 38 40.82	+4.538	+20 34 49.5	+ 6.32	19 13.9
13	4 18 39.90	−0.367	19 47 54.8	2.75	6 45.6	15	4 38 57.97	4.035	20 35 12.6	5.24	18 58.5
17	4 18 39.59	+0.209	19 48 8.7	4.19	6 29.8	19	4 39 13.08	3.518	20 35 31.4	4.14	18 43.0
21	4 18 41.58	0 790	19 48 28.3	5.60	6 14.1	23	4 39 26.09	2.983	20 35 45.7	3.01	18 27.5
25	4 18 45.91	1.369	19 48 53.5	7.02	5 58.5	27	4 39 36.93	2.437	20 35 55.5	1.85	18 11.9
29	4 18 52.53	+1.945	+19 49 24.4	+ 8.39	5 42.9	31	4 39 45.57	+1.881	+20 36 0.8	+ 0.77	17 56.3
Mar. 4	4 19 1.46	2.513	19 50 0.6	9.72	5 27.3	Sept. 4	4 39 51.97	1.322	20 36 1.7	− 0.32	17 40.7
8	4 19 12.62	3.068	19 50 42.1	11.01	5 11.8	8	4 39 56.14	0.761	20 35 58.2	1.41	17 25.0
12	4 19 25.99	3.611	19 51 28.6	12.22	4 56.3	12	4 39 58.05	+0.195	20 35 50.4	2.50	17 9.3
16	4 19 41.49	4.138	19 52 19.8	13.38	4 40.8	16	4 39 57.70	−0.373	20 35 38.2	3.59	16 53.6
20	4 19 59.07	+4.649	+19 53 15.6	+14.48	4 25.4	20	4 39 55.07	−0.937	+20 35 21.7	− 4.63	16 37.8
24	4 20 18.66	5.145	19 54 15.6	15 54	4 10.0	24	4 39 50.21	1.495	20 35 1.2	5.64	16 22.0
28	4 20 40.20	5.620	19 55 19.8	16.53	3 54.6	28	4 39 43.12	2.042	20 34 36.6	6.62	16 6.2
Apr. 1	4 21 3.59	6.071	19 56 27.7	17.42	3 39.3	Oct. 2	4 39 33.88	2.575	20 34 8.3	7.57	15 50.3
5	4 21 28.74	6.500	19 57 39.0	18.22	3 24.0	6	4 39 22.54	3.093	20 33 36.1	8.50	15 34.3
9	4 21 55.55	+6.900	+19 58 53.3	+18.92	3 8.7	10	4 39 9.17	−3.591	+20 33 0.4	− 9.36	15 18.4
13	4 22 23.90	7.272	20 0 10.3	19.57	2 53.4	14	4 38 53.84	4.070	20 32 21.3	10.18	15 2.4
17	4 22 53.69	7 621	20 1 29.8	20.15	2 38.2	18	4 38 36.64	4.529	20 31 39.0	10.96	14 46.4
21	4 23 24.83	7.944	20 2 51.4	20.64	2 23.0	22	4 38 17.65	4.957	20 30 53.7	11.67	14 30.3
25	4 23 57.20	8.236	20 4 14.8	21.04	2 7.8	26	4 37 57.03	5.352	20 30 5.7	12.31	14 14.3
29	4 24 30.68	+8.499	+20 5 39.6	+21.35	1 52.6	30	4 37 34.88	−5.717	+20 29 15.3	−12.89	13 58.2
May 3	4 25 5.15	8.728	20 7 5.5	21.56	1 37.4	Nov. 3	4 37 11.35	6.041	20 28 22.7	13.39	13 42.1
7	4 25 40.46	8.925	20 8 32.0	21.68	1 22.3	7	4 36 46.60	6.328	20 27 28.3	13.81	13 25.9
11	4 26 16.51	9.093	20 9 58.9	21.75	1 7.2	11	4 36 20.77	6.581	20 26 32.3	14.17	13 9.7
15	4 26 53.16	9.229	20 11 25.9	21.75	0 52.1	15	4 35 54.01	6.791	20 25 35.1	14.41	12 53.6
19	4 27 30.30	+9.337	+20 12 52.8	+21.65	0 37.0	19	4 35 26.50	−6.957	+20 24 37.1	−14.57	12 37.4
23	4 28 7.81	9.412	20 14 19.0	21.47	0 21.9	23	4 34 58.42	7.075	20 23 38.6	14.67	12 21.2
27	4 28 45.55	9.451	20 15 44.5	21.24	0 6.8	27	4 34 29.96	7.146	20 22 39.9	14.64	12 5.0
31	4 29 23.38	9.459	20 17 8.8	20.91	23 47.9	Dec. 1	4 34 1.31	7.172	20 21 41.6	14.50	11 48.8
June 4	4 30 1.18	9.433	20 18 31.7	20.52	23 32.8	5	4 33 32.65	7.150	20 20 44.0	14.29	11 32.6
8	4 30 38.80	+9.375	+20 19 52.9	+20.06	23 17.7	9	4 33 4.17	−7.082	+20 19 47.4	−13.99	11 16.4
12	4 31 16.14	9.289	20 21 12.1	19.54	23 2.5	13	4 32 36.05	6.973	20 18 52.2	13.58	11 0.2
16	4 31 53.07	9 172	20 22 29.2	18.98	22 47.4	17	4 32 8.45	6.817	20 17 58.9	13.08	10 44.0
20	4 32 29.47	9.024	20 23 43.9	18.34	22 32.3	21	4 31 41.58	6.610	20 17 7.7	12.49	10 27.9
24	4 33 5.22	8.844	20 24 55.9	17.66	22 17.1	25	4 31 15.63	6.359	20 16 19.1	11.78	10 11.8
28	4 33 40.18	+8.631	+20 26 5.1	+16.91	22 2.0	29	4 30 50.76	−6.069	+20 15 33.6	−10.99	9 55.6
July 2	4 34 14.23	+8.388	+20 27 11.1	+16.11	21 46.8	33	4 30 27.13	−5.739	+20 14 51.3	−10.14	9 39.5

Greatest horizontal parallax,	December	1, 0″.31.	Greatest semidiameter,	December	1, 1″.33.
Least horizontal parallax,	May	30, 0″.29.	Least semidiameter,	May	30, 1″.25.

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Jan. 0	112 41 7.2	5 56 44.1	+ 9 39.0	+6 23 5.5	+17 51.2	9.5030990	9.8323381	9.8369381
2	124 18 38.1	5 40 17.9	5 31.1	6 49 56.7	9 5.4	9.5137350	9.8430375	9.8503997
4	135 20 53.9	5 21 43.9	+ 0 45.5	7 0 0.2	+ 1 9.3	9.5260723	9.8587810	9.8679459
6	145 45 4.4	5 2 25.2	− 3 50.2	6 55 23.6	− 5 32.4	9.5394431	9.8776739	9.8877788
8	155 30 46.8	4 43 26.7	7 42.6	6 38 45.0	10 52.8	9.5532660	9.8980977	9.9084948
10	164 39 34.1	4 25 32.0	−10 33.0	+6 12 43.6	−14 56.4	9.5670715	9.9188618	9.9291130
12	173 13 56.5	4 9 6.6	12 15.2	5 39 43.7	17 53.4	9.5805020	9.9391825	9.9490215
14	181 17 7.9	3 54 22.2	12 51.9	5 1 46.3	19 55.9	9.5932985	9.9585943	9.9678770
16	188 52 34.1	3 41 21.0	12 31.2	4 20 29.0	21 15.2	9.6052820	9.9768533	9.9855143
18	196 3 38.5	3 29 59.7	11 23.0	3 37 7.5	22 1.6	9.6163343	9.9938575	0.0018824
20	202 53 35.7	3 20 12.4	− 9 38.1	+2 52 39.3	−22 23.0	9.6263818	0.0095925	0.0169937
22	209 25 25.9	3 11 51.5	7 27.1	2 7 47.8	22 25.8	9.6353825	0.0240931	0.0308990
24	215 41 54.5	3 4 49.7	4 58.9	1 23 5.2	22 14.8	9.6433156	0.0374206	0.0436667
26	221 45 32.8	2 59 0.0	− 2 22.2	+0 38 55.4	21 53.5	9.6501742	0.0496469	0.0553708
28	227 38 38.7	2 54 16.4	+ 0 16.1	−0 4 23.6	21 24.4	9.6559597	0.0608481	0.0660873
30	233 23 18.7	2 50 33.4	+ 2 50.1	−0 46 38.0	−20 49.1	9.6606780	0.0710977	0.0758877
Feb. 1	239 1 29.8	2 47 47.0	5 14.7	1 27 36.8	20 8.9	9.6643370	0.0804646	0.0848367
3	244 35 2.1	2 45 54.0	7 25.2	2 7 10.7	19 24.3	9.6669445	0.0890107	0.0929933
5	250 5 39.8	2 44 52.0	9 17.9	2 45 11.3	18 35.5	9.6685066	0.0967909	0.1004094
7	255 35 2.9	2 44 39.4	10 49.6	3 21 30.0	17 42.5	9.6690272	0.1038538	0.1071285
9	261 4 49.8	2 45 15.7	+11 57.4	−3 55 58.0	−16 44.7	9.6685079	0.1102376	0.1131848
11	266 36 38.3	2 46 41.0	12 39.0	4 28 25.0	15 41.3	9.6669471	0 1159737	0.1186076
13	272 12 7.4	2 48 56.5	12 52.3	4 58 39.0	14 31.5	9.6643411	0.1210886	0.1234178
15	277 52 58.9	2 52 3.9	12 35.7	5 26 25.7	13 13.7	9.6606833	0.1255967	0.1276254
17	283 40 59.4	2 56 6.0	11 48.4	5 51 27.5	11 46.4	9.6559662	0.1295044	0.1312333
19	289 38 1.3	3 1 5.9	+10 29.9	−6 13 23.4	−10 7.3	9.6501820	0.1328106	0.1342347
21	295 46 4.3	3 7 7.9	8 40.9	6 31 47.4	8 14.1	9.6433249	0.1355033	0.1366134
23	302 7 17.4	3 14 16.8	6 23.2	6 46 8.4	6 3.7	9.6353930	0.1375609	0.1383415
25	308 43 59.9	3 22 38.4	3 40.2	6 55 48.7	3 32.9	9.6263935	0.1389496	0.1393790
27	315 38 42.6	3 32 18.0	+ 0 37.6	7 0 3.7	− 0 37.8	9.6163471	0.1396219	0.1396706
29	322 54 7.4	3 43 21.0	− 2 36.2	−6 58 1.0	+ 2 45.4	9.6052959	0.1395151	0.1391449
Mar. 2	330 33 5.5	3 55 52.0	5 49.5	6 48 41.0	6 40.2	9.5933132	0.1385495	0.1377144
4	338 38 35.3	4 9 52.9	8 47.1	6 30 57.5	11 9.1	9.5805174	0.1366249	0.1352652
6	347 13 35.7	4 25 21.6	11 10.0	6 3 41.8	16 12.2	9.5670876	0.1336188	0.1316668
8	356 20 54.3	4 42 9.1	12 36.5	5 25 48.7	21 45.3	9.5532821	0.1293886	0.1267629
10	6 2 51.9	4 59 56.2	−12 45.2	−4 36 27.6	+27 37.6	9.5394587	0.1237671	0.1203773
12	16 20 57.5	5 18 10.4	11 19.2	3 35 19.0	33 28.0	9.5260870	0.1165699	0.1123205
14	27 15 19.0	5 36 2.4	8 13.6	2 22 55.4	38 46.4	9.5137480	0.1076054	0.1024012
16	38 44 7.4	5 52 24.9	− 3 41.8	−1 1 3.4	42 49.3	9.5031095	0.0966869	0.0904446
18	50 43 5.3	6 5 57.6	+ 1 38.9	+0 27 1.2	44 51.5	9.4948643	0.0836591	0.0763201
20	63 5 8.8	6 15 17.3	+ 6 51.3	+1 56 36.6	+44 15.2	9.4896346	0.0684224	0.0599665
22	75 40 39.2	6 19 15.0	10 50.9	3 22 5.6	40 45.0	9.4878560	0.0509592	0.0414151
24	88 18 8.7	6 17 13.8	12 46.1	4 37 50.6	34 36.6	9.4896850	0.0313541	0.0208031
26	100 45 39.6	6 9 21.7	12 16.1	5 39 16.1	26 35.6	9.4949608	0.0097955	9.9983702
28	112 52 15.6	5 56 30.5	9 35.7	6 23 38.6	17 43.0	9.5032440	9.9865708	9.9744458
30	124 29 16.4	5 40 1.8	+ 5 26.8	+6 50 13.4	+ 8 57.1	9.5139111	9.9620469	9.9494300
32	135 30 58.1	5 21 26.4	+ 0 41.1	+7 0 2.2	+ 1 2.5	9.5262692	9.9366531	9.9237778

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Apr. 1	135 30 58.1	5 21 26.4	+ 0 41.1	+7 0 2.2	+ 1 2.5	9.5262692	9.9366531	9.9237778
3	145 54 33.2	5 2 7.7	− 3 54.0	6 55 13.3	− 5 38.0	9.5396511	9.9108677	9.8979903
5	155 39 43.0	4 43 9.7	7 45.8	6 38 24.8	10 57.1	9.5534770	9.8852143	9.8726117
7	164 47 55.2	4 25 16.0	10 35.1	6 12 16.0	14 50.6	9.5672794	9.8602559	9.8482238
9	173 21 47.3	4 8 52.2	12 16.4	5 39 10.6	17 55.8	9.5807024	9.8365932	9.8254429
11	181 24 31.4	3 54 9.4	−12 52.0	+5 1 9.4	−19 57.4	9.5934881	9.8148523	9.8048985
13	188 59 33.7	3 41 9.8	12 30.5	4 19 49.7	21 16.1	9.6054585	9.7956576	9.7871999
15	196 10 17.5	3 29 50.0	11 21.5	3 36 26.8	22 2.1	9.6164963	9.7795906	9.7728862
17	202 59 56.3	3 20 4.0	9 36.4	2 51 57.9	22 23.2	9.6265285	9.7671346	9.7623714
19	209 31 30.6	3 11 44.3	7 24.9	2 7 6.4	22 25.7	9.6355132	9.7586203	9.7558916
21	215 47 46.2	3 4 43.8	− 4 56.6	+1 22 24.1	−22 14.6	9.6434302	9.7541828	9.7534779
23	221 51 13.8	2 58 55.2	− 2 19.8	+0 38 15.0	21 53.1	9.6502726	9.7537493	9.7549576
25	227 44 10.7	2 54 12.3	+ 0 18.6	−0 5 3.1	21 23.8	9.6560422	9.7570552	9.7599879
27	233 28 43.6	2 50 30.3	2 52.5	0 47 16.4	20 48.6	9.6607444	9.7636949	9.7681131
29	239 6 49.6	2 47 44.8	5 16.8	1 28 14.0	20 8.2	9.6643875	9.7731776	9.7788239
May 1	244 40 18.4	2 45 52.6	+ 7 27.0	−2 7 46.4	−19 23.6	9.6669789	9.7849886	9.7916109
3	250 10 54.1	2 44 51.4	9 19.4	2 45 45.5	18 34.8	9.6685250	9.7986331	9.8060012
5	255 40 16.9	2 44 39.5	10 50.8	3 22 2.7	17 41.6	9.6690297	9.8136654	9.8215809
7	261 10 4.8	2 45 16.5	11 58.2	3 56 28.9	16 43.7	9.6684942	9.8297054	9.8380023
9	266 41 55.7	2 46 42.7	12 39.4	4 28 53.9	15 40.3	9.6669171	9.8464382	9.8549832
11	272 17 29.1	2 48 59.0	+12 52.2	−4 59 5.8	−14 30.3	9.6642946	9.8636109	9.8722975
13	277 58 26.3	2 52 7.1	12 35.3	5 26 50.0	13 12.4	9.6606203	9.8810231	9.8897696
15	283 46 34.1	2 56 10.0	11 47.5	5 51 49.2	11 45.0	9.6558864	9.8985209	9.9072626
17	289 43 45.0	3 1 10.9	10 28.5	6 13 42.0	10 5.7	9.6500853	9.9159817	9.9240674
19	295 51 59.0	3 7 13.9	8 39.0	6 32 2.6	8 12.2	9.6432112	9.9333100	9.9418999
21	302 13 25.3	3 14 24.0	+ 6 20.9	−6 46 19.5	− 6 1.6	9.6352625	9.9504288	9.9588879
23	308 50 23.5	3 22 46.7	3 37.5	6 55 55.2	3 30.4	9.6262462	9.9672699	9.9755674
25	315 45 24.3	3 32 27.6	+ 0 34.7	7 0 4.8	− 0 34.8	9.6161834	9.9837729	9.9918783
27	323 1 9.5	3 43 32.0	− 2 39.2	6 57 55.9	+ 2 48.8	9.6051167	9.9998750	0.0077545
29	330 40 31.0	3 56 4.3	5 52.4	6 48 28.6	6 44.0	9.5931201	0.0155073	0.0231234
31	338 46 26.8	4 10 6.6	− 8 49.6	−6 30 36.9	+11 13.5	9.5803125	0.0305917	0.0379000
June 2	347 21 56.0	4 25 36.6	11 11.8	6 3 11.8	16 17.1	9.5668744	0.0450346	0.0519804
4	356 29 46.0	4 42 25.6	12 37.2	5 25 8.4	21 50.7	9.5530654	0.0587214	0.0652404
6	6 12 17.1	5 0 13.3	12 44.6	4 35 36.4	27 43.1	9.5392450	0.0715179	0.0775335
8	16 30 57.0	5 18 27.6	11 17.2	3 34 17.0	33 33.8	9.5258844	0.0832654	0.0886912
10	27 25 52.2	5 36 18.8	− 8 10.0	−2 21 43.5	+38 50.9	9.5135662	0.0937872	0.0985300
12	38 55 11.7	5 52 39.3	− 3 37.1	−0 59 43.9	42 52.2	9.5029595	0.1028957	0.1068621
14	50 54 35.1	6 6 8.6	+ 1 44.0	+0 28 24.4	44 52.2	9.4947566	0.1104076	0.1135140
16	63 16 56.3	6 15 23.8	6 55.8	1 57 58.8	44 13.3	9.4895773	0.1161652	0.1183495
18	75 52 34.4	6 19 16.1	10 53.8	3 23 21.3	40 40.4	9.4878542	0.1200586	0.1212891
20	88 30 0.6	6 17 9.2	+12 46.8	+4 38 54.9	+34 29.9	9.4897387	0.1220426	0.1223240
22	100 57 17.2	6 9 12.0	12 14.5	5 40 6.1	26 27.6	9.4950652	0.1221451	0.1215188
24	113 3 29.4	5 56 16.7	9 32.4	6 24 11.4	17 34.6	9.5033906	0.1204629	0.1189968
26	124 39 59.7	5 39 45.3	5 22.5	6 50 30.0	8 49.6	9.5140896	0.1171413	0.1149203
28	135 41 7.1	5 21 8.6	+ 0 36.6	7 0 4.0	+ 0 55.6	9.5264687	0.1123559	0.1094713
30	146 4 6.2	5 1 49.5	− 3 58.1	+6 55 2.7	− 5 43.5	9.5398621	0.1062890	0.1028303
32	155 48 40.3	4 49 52.4	− 7 48.9	+6 38 4.3	−11 1.5	9.5536915	0.0991154	0.0951635

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
July 2	155 48 40.3	4 42 52.4	− 7 48.9	+6 38 4.3	−11 1.5	9.5536915	0.0991154	0.0951635
4	164 56 19.4	4 25 0.1	10 37.2	6 11 48.0	15 2.9	9.5674909	0.0909917	0.0866162
6	173 29 40.8	4 8 37.6	12 17.4	5 38 37.1	17 58.0	9.5809059	0.0820513	0.0773107
8	181 31 57.6	3 53 56.4	12 52.1	5 0 32.3	19 59.0	9.5936803	0.0724060	0.0673465
10	189 6 35.4	3 40 58.4	12 29.7	4 19 10.1	21 17.1	9.6056373	0.0621415	0.0567999
12	196 16 57.8	3 29 40.2	−11 20.2	+3 35 45.7	−22 2.6	9.6166604	0.0513282	0.0457319
14	203 6 18.6	3 19 55.5	9 34.5	2 51 16.3	22 23.3	9.6266767	0.0400150	0.0341836
16	209 37 37.5	3 11 37.2	7 22.6	2 6 24.7	22 25.7	9.6356452	0.0282404	0.0221880
18	215 53 39.9	3 4 37.9	4 54.2	1 21 42.7	22 14.3	9.6435456	0.0160287	0.0097644
20	221 56 56.7	2 58 50.2	− 2 17.5	+0 37 34.3	21 52.7	9.6503716	0.0033970	9.9969275
22	227 49 44.7	2 54 8.4	+ 0 21.0	−0 5 42.9	−21 23.4	9.6561242	9.9903568	9.9836861
24	233 34 10.6	2 50 27.3	2 54.8	0 47 55.1	20 47.9	9.6608099	9.9769165	9.9700492
26	239 12 11.5	2 47 42.7	5 18.9	1 28 51.4	20 7.6	9.6644366	9.9630855	9.9560272
28	244 45 36.9	2 45 51.3	7 28.9	2 8 22.5	19 22.9	9.6670115	9.9488771	9.9416380
30	250 16 10.7	2 44 50.8	9 21.0	2 46 20.1	18 34.0	9.6685413	9.9343146	9.9269118
Aug. 1	255 45 33.0	2 44 39.7	+10 52.0	−3 22 35.6	−17 40.8	9.6690297	9.9194360	9.9118960
3	261 15 22.0	2 45 17.4	11 59.1	3 57 0.0	16 42.8	9.6684779	9.9043020	9.8966668
5	266 47 15.5	2 46 44.4	12 39.9	4 29 23.0	15 39.3	9.6668844	9.8890053	9.8813359
7	272 22 52.9	2 49 1.5	12 52.2	4 59 32.7	14 29.2	9.6642455	9.8736801	9.8660650
9	278 3 56.2	2 52 10.4	12 34.8	5 27 14.6	13 11.2	9.6605547	9.8585211	9.8510838
11	283 52 11.4	2 56 14.2	+11 46.5	−5 52 11.0	−11 43.5	9.6558042	9.8437940	9.8367006
13	289 49 31.4	3 1 16.0	10 26.9	6 14 0.8	10 4.1	9.6499865	9.8298577	9.8233259
15	295 57 56.8	3 7 19.9	8 37.1	6 32 17.8	8 10.4	9.6430956	9.8171736	9.8114763
17	302 19 36.6	3 14 31.3	6 18.6	6 46 30.7	5 59.4	9.6351302	9.8063147	9.8017749
19	308 56 50.5	3 22 55.2	3 34.9	6 56 1.7	3 27.9	9.6260975	9.7979473	9.7949234
21	315 52 9.3	3 32 37.2	+ 0 31.8	−7 0 5.9	− 0 38.0	9.6160188	9.7927938	9.7916444
23	323 8 15.0	3 43 43.0	− 2 42.1	6 57 50.7	+ 2 52.2	9.6049371	9.7915529	9.7925864
25	330 48 0.0	3 56 16.8	5 55.4	6 48 16.1	6 48.0	9.5929271	9.7947958	9.7982139
27	338 54 22.3	4 10 20.5	8 52.1	6 30 16.0	11 17.9	9.5801084	9.8028520	9.8087000
29	347 30 20.6	4 25 51.8	11 13.6	6 2 41.5	16 22.1	9.5666624	9.8157226	9.8238656
31	356 38 42.0	4 42 41.5	−12 38.0	−5 24 27.7	+21 56.1	9.5528506	9.8330532	9.8431930
Sept. 2	6 21 46.3	5 0 30.2	12 44.1	4 34 44.7	27 48.6	9.5390336	9.8541776	9.8658917
4	16 41 0.3	5 18 44.7	11 15.0	3 33 14.4	33 38.8	9.5256846	9.8782110	9.8910093
6	27 36 29.1	5 36 34.6	8 6.4	2 20 31.1	38 55.3	9.5133883	9.9041600	9.9175394
8	39 6 18 5	5 52 53.2	− 3 32.3	−0 58 24.1	42 55.2	9.5028139	9.9310280	9.9445129
10	51 6 6.9	6 6 19.4	+ 1 49.0	+0 29 48.0	+44 53.0	9.4946537	9.9578894	9.9710621
12	63 28 45.4	6 15 30.0	7 0.1	1 59 21.1	44 11.3	9.4895253	9.9839452	9.9964642
14	76 4 30.3	6 19 16.7	10 56.5	3 24 36.9	40 35.7	9.4878575	0.0085557	0.0201677
16	88 41 52.1	6 17 4.2	12 47.4	4 39 59.0	34 23.1	9.4897970	0.0312601	0.0418033
18	101 8 53.4	6 9 1.8	12 12.9	5 40 55.2	26 19.5	9.4951741	0.0517782	0.0611749
20	113 14 41.0	5 56 2.6	+ 9 29.2	+6 24 44.0	+17 26.3	9.5035411	0.0699931	0.0782374
22	124 50 40.2	5 39 28.6	5 18.3	6 50 46.3	8 41.8	9.5142713	0.0859198	0.0930570
24	135 51 12.6	5 20 50.6	+ 0 32.2	7 0 5.7	+ 0 48.9	9.5266711	0.0996684	0.1057759
26	146 13 35.3	5 1 31.5	− 4 2.0	6 54 52.1	− 5 49.0	9.5400754	0.1114034	0.1165748
28	155 57 34.1	4 42 35.2	7 52.1	6 37 43.9	11 5.8	9.5539076	0.1213147	0.1256468
30	165 4 39.7	4 24 44.0	−10 39.2	+6 11 20.1	−15 6.0	9.5677032	0.1295945	0.1331794
32	173 37 30.4	4 8 23.0	−12 18.3	+5 38 3.9	−18 0.2	9.5811098	0.1364228	0.1393443

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Oct. 2	173 37 30.4	4 8 23.0	−12 18.3	+5 38 3.9	−18 0.2	9.5811098	0.1364228	0.1393443
4	181 39 19.5	3 53 43.4	12 52.1	4 59 55.4	20 0.3	9.5938726	0.1419620	0.1442925
6	189 13 33.0	3 40 47.0	12 28.9	4 18 30.8	21 18.0	9.6058158	0.1463516	0.1481533
8	196 23 34.2	3 29 30.4	11 18.8	3 35 5.1	22 3.0	9.6168232	0.1497101	0.1510342
10	203 12 36.7	3 19 47.1	9 32.5	2 50 35.1	22 23.5	9.6268234	0.1521357	0.1530239
12	209 43 40.2	3 11 30.2	− 7 20.4	+2 5 43.4	−22 25.6	9.6357751	0.1537071	0.1541928
14	215 59 29.9	3 4 32.0	4 51.9	1 21 1.8	22 14.0	9.6436586	0.1544875	0.1545966
16	222 2 35.8	2 58 45.4	− 2 14.9	+0 36 54.0	21 52.3	9.6504675	0.1545251	0.1542771
18	227 55 15.5	2 54 4.6	+ 0 23.3	−0 6 22.2	21 22.8	9.6562034	0.1538557	0.1532638
20	233 39 34.7	2 50 24.3	2 57.1	0 48 33.3	20 47.4	9.6608724	0.1525035	0.1515764
22	239 17 30.5	2 47 40.6	+ 5 21.1	−1 29 28.4	−20 7.0	9.6644827	0.1504833	0.1492247
24	244 50 52.5	2 45 50.0	7 30.7	2 8 58.2	19 22.2	9.6670414	0.1478003	0.1462096
26	250 21 24.4	2 44 50.3	9 22.6	2 46 54.2	18 33.2	9.6685552	0.1444514	0.1425238
28	255 50 46.5	2 44 40.0	10 53.2	3 23 8.1	17 39.9	9.6690275	0.1404248	0.1381518
30	261 20 36.8	2 45 18.4	11 59.8	3 57 30.7	16 41.8	9.6684599	0.1357014	0.1330700
Nov. 1	266 52 32.9	2 46 46.1	+12 40.3	−4 29 51.8	−15 38.3	9.6668505	0.1302530	0.1272459
3	272 28 14.7	2 49 4.0	12 52.1	4 59 59.4	14 28.1	9.6641957	0.1240433	0.1206389
5	278 9 23.7	2 52 13.8	12 34.2	5 27 38.8	13 9.8	9.6604889	0.1170260	0.1131971
7	283 57 46.4	2 56 18.4	11 45.6	5 52 32.6	11 42.0	9.6557223	0.1091447	0.1048605
9	289 55 16.0	3 1 21.1	10 25.5	6 14 19.3	10 2.4	9.6498883	0.1003348	0.0955582
11	296 3 52.3	3 7 26.0	+ 8 35.2	−6 32 32.8	− 8 8.5	9.6429812	0.0905198	0.0852081
13	302 25 45.0	3 14 38.4	6 16.3	6 46 41.7	5 57.2	9.6349996	0.0796113	0.0737169
15	309 3 14.2	3 23 3.4	3 32.2	6 56 8.0	3 25.4	9.6259509	0.0675117	0.0609822
17	315 58 51.0	3 32 46.8	+ 0 28.8	7 0 6.8	− 0 29.0	9.6158566	0.0541147	0.0468951
19	323 15 17.1	3 43 53.8	− 2 45.2	6 57 45.3	+ 2 55.5	9.6047603	0.0393102	0.0313469
21	330 55 25.0	3 56 29.0	− 5 58.2	−6 48 3.5	+ 6 51.8	9.5927371	0.0229921	0.0142368
23	339 2 13.0	4 10 34.0	8 54.7	6 29 55.1	11 22.3	9.5799073	0.0050735	9.9954984
25	347 38 39.7	4 26 7.0	11 15.4	6 2 11.3	16 27.0	9.5664538	9.9855136	9.9751283
27	356 47 32.1	4 42 57.4	12 38.8	5 23 47.3	22 1.3	9.5526388	9.9643610	9.9532420
29	6 31 8.8	5 0 46.8	12 43.4	4 33 53.6	27 54.1	9.5388252	9.9418183	9.9301550
Dec. 1	16 50 56.3	5 19 1.3	−11 12.8	−3 32 12.5	+33 44.8	9.5254874	9.9183410	9.9064924
3	27 46 57.5	5 36 50.8	8 2.6	2 19 19.5	38 59.7	9.5132118	9.8947562	9.8833130
5	39 17 17.4	5 53 7.2	− 3 27.8	−0 57 5.2	42 58.0	9.5026688	9.8723760	9.8621881
7	51 17 30.0	6 6 29.7	+ 1 54.1	+0 31 10.4	44 53.6	9.4945503	9.8530134	9.8451248
9	63 40 25.0	6 15 35.8	7 4.5	2 0 42.2	44 9.4	9.4894720	9.8387823	9.8342141
11	76 16 16.6	6 19 17.4	+10 59.3	+3 25 51.4	+40 31.1	9.4878591	9.8315908	9.8310076
13	88 53 34.1	6 16 59.4	12 47.9	4 41 2.0	34 16.4	9.4898532	9.8324730	9.8359091
15	101 20 20.6	6 8 52.0	12 11.3	5 41 43.4	26 11.8	9.4952796	9.8411567	9.8480042
17	113 25 44.6	5 55 48.9	9 25.8	6 25 15.9	17 18.0	9.5036876	9.8561982	9.8654735
19	125 1 13.6	5 39 12.2	5 14.0	6 51 2.1	8 34.0	9.5144485	9.8755693	9.8862457
21	136 1 12.0	5 20 33.2	+ 0 27.9	+7 0 7.1	+ 0 42.2	9.5268680	9.8972869	9.9085113
23	146 23 0.0	5 1 14.1	− 4 6.0	6 54 41.3	− 5 54.5	9.5402828	9.9197690	9.9309399
25	156 6 24.3	4 42 18.3	7 55.2	6 37 23.4	11 10.0	9.5541173	9.9419308	9.9526725
27	165 12 57.4	4 24 28.4	10 41.3	6 10 52.3	15 9.2	9.5679096	9.9631136	9.9732191
29	173 45 18.3	4 8 8.9	12 19.3	5 37 30.7	18 2.5	9.5813081	9.9829666	9.9923431
31	181 46 40.8	3 53 30.9	−12 52.2	+4 59 18.4	−20 1.8	9.5940595	0.0013428	0.0099661
33	189 20 30.7	3 40 36.0	−12 28.2	+4 17 51.5	−21 18.9	9.6059891	0.0182172	0.0261032

VENUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Jan. 0	340 49 2.3	1 35 11.0	+0 30.7	−3 22 52.3	−0 28.8	9.8618557	0.1695659	0.1670349
4	347 9 56.3	1 35 16.0	−0 9.2	3 23 32.8	+0 8.6	9.8616712	0.1644471	0.1618019
8	353 31 10.8	1 35 21.3	0 48.7	3 21 43.7	0 45.9	9.8614579	0.1590986	0.1563308
12	359 52 46.9	1 35 26.8	1 25.8	3 17 26.0	1 22.8	9.8612182	0.1535157	0.1506348
16	6 14 45.3	1 35 32.5	1 58.8	3 10 42.2	1 58.8	9.8609549	0.1476937	0.1446913
20	12 37 6.8	1 35 38.3	−2 26.0	−3 1 36.9	+2 33.5	9.8606714	0.1416260	0.1384959
24	18 59 51.9	1 35 44.3	2 46.0	2 50 16.2	3 6.4	9.8603709	0.1352995	0.1320349
28	25 23 1.3	1 35 50.4	2 57.8	2 36 48.0	3 37.2	9.8600572	0.1286989	0.1252899
Feb. 1	31 46 35.7	1 35 56.8	3 0.8	2 21 21.8	4 5.4	9.8597340	0.1218060	0.1182449
5	38 10 35.7	1 36 3.3	2 54.9	2 4 8.7	4 30.6	9.8594054	0.1146052	0.1108856
9	44 35 2.0	1 36 9.9	−2 40.2	−1 45 21.1	+4 52 6	9.8590753	0.1070849	0.1032017
13	50 59 55.2	1 36 16.8	2 17.5	1 25 12.7	5 11.0	9.8587481	0.0992346	0.0951824
17	57 25 16.1	1 36 23.7	1 47.9	1 3 58.4	5 25.5	9.8584276	0.0910430	0.0868141
21	63 51 5.1	1 36 30.8	1 12.9	0 41 54.0	5 35.9	9.8581180	0.0824932	0.0780774
25	70 17 22.7	1 36 38.0	−0 34.1	−0 19 16.0	5 42.2	9.8578234	0.0735632	0.0689474
29	76 44 9.0	1 36 45.2	+0 6.5	+0 3 38.3	+5 44.2	9.8575474	0.0642270	0.0593985
Mar. 4	83 11 24.0	1 36 52.3	0 46.8	0 26 31.4	5 41.7	9.8572935	0.0544588	0.0494054
8	89 39 7.4	1 36 59.3	1 24.7	0 49 6.0	5 34.8	9.8570650	0.0442363	0.0389493
12	96 7 18.0	1 37 5.9	1 58.3	1 11 4.4	5 23.6	9.8568652	0.0335417	0.0280115
16	102 35 54.4	1 37 12.2	2 26.0	1 32 9.4	5 8.2	9.8566963	0.0223560	0.0165726
20	109 4 54.5	1 37 17.8	+2 46.3	+1 52 4.7	+4 48.8	9.8565609	0.0106570	0.0046054
24	115 34 15.8	1 37 22.7	2 58.2	2 10 34.8	4 25.6	9.8564606	9.9984139	9.9920779
28	122 3 55.1	1 37 26.8	3 1.0	2 27 24.9	3 58.9	9.8563967	9.9855920	9.9789519
Apr. 1	128 33 48.7	1 37 29.8	2 54.3	2 42 21.5	3 29.0	9.8563700	9.9721529	9.9651896
5	135 3 52.1	1 37 31.7	2 38.7	2 55 13.3	2 56.4	9.8563809	9.9580589	9.9507568
9	141 34 0.4	1 37 32.2	+2 15.0	+3 5 50.2	+2 21.5	9.8564292	9.9432795	9.9356235
13	148 4 8.3	1 37 31.5	1 44.5	3 14 3.5	1 44 8	9.8565146	9.9277858	9.9197610
17	154 34 10.4	1 37 29.3	1 8.6	3 19 47.0	1 6.8	9.8566359	9.9115451	9.9031333
21	161 4 1.2	1 37 25.8	+0 29.2	3 22 56.7	+0 28.0	9.8567913	9.8945199	9.8856989
25	167 33 35.0	1 37 20.8	−0 11.6	3 23 30.5	−0 11.1	9.8569788	9.8766632	9.8674064
29	174 2 46.4	1 37 14.6	−0 51.8	+3 21 28.2	−0 50.0	9.8571960	9.8579218	9.8482036
May 3	180 31 30.3	1 37 7.2	1 29.3	3 16 51.8	1 28.1	9.8574400	9.8382459	9.8280444
7	186 59 42.4	1 36 58 6	2 2.3	3 9 45.6	2 4 9	9.8577077	9.8175951	9.8068943
11	193 27 18.3	1 36 49.2	2 29.0	3 0 15.5	2 40.0	9.8579957	9.7959403	9.7847310
15	199 54 14.9	1 36 39.0	2 48.1	2 48 29.4	3 12.8	9.8583001	9.7732645	9.7615394
19	206 20 30.0	1 36 28.4	−2 58.8	+2 34 36.9	−3 43.0	9.8586172	9.7495554	9.7373128
23	212 46 1.8	1 36 17.4	3 0.5	2 18 49.0	4 10.3	9.8589428	9.7248125	9.7120578
27	219 10 49.6	1 36 6.4	2 53.2	2 1 18.4	4 34.4	9.8592728	9.6990539	9.6858113
31	225 34 53.7	1 35 55.6	2 37.2	1 42 18.6	4 54.9	9.8596033	9.6723456	9.6586770
June 4	231 58 15.1	1 35 45.2	2 13.5	1 22 4.1	5 11.6	9.8599299	9.6448322	9.6308495
8	238 20 55.6	1 35 35.2	−1 43.2	+1 0 50.5	−5 24.4	9.8602487	9.6167759	9.6026669
12	244 42 58.0	1 35 26.1	1 7.8	0 38 53.7	5 33.2	9.8605557	9.5885879	9.5746212
16	251 4 25.5	1 35 17.8	−0 29.2	+0 16 29.9	5 37.9	9.8608472	9.5608601	9.5474132
20	257 25 21.8	1 35 10.5	+0 10.8	−0 6 4.2	5 38.4	9.8611199	9.5344025	9.5219664
24	263 45 51.2	1 35 4.3	0 50.2	0 28 32.2	5 34.9	9.8613702	9.5102565	9.4994390
28	270 5 58.0	1 34 59.2	+1 27.1	−0 50 37.9	−5 27.3	9.8615951	9.4896895	9.4811839
July 2	276 25 46.9	1 34 55.3	+1 59.8	−1 12 5.3	−5 15.8	9.8617922	9.4740936	9.4685754

VENUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
July 2	276 25 46.9	1 34 55.3	+1 59.8	−1 12 5.3	−5 15.8	9.8617922	9.4740936	9.4685754
6	282 45 22.5	1 34 52.6	2 26.6	1 32 38.9	5 0.4	9.8619588	9.4647600	9.4627402
10	289 4 49.5	1 34 51.0	2 46.3	1 52 4.0	4 41.5	9.8620933	9.4625635	9.4642284
14	295 24 12.2	1 34 50.5	2 57.9	2 10 6.8	4 19.3	9.8621940	9.4676856	9.4728389
18	301 43 34.7	1 34 51.0	3 0.9	2 26 34.3	3 54.0	9.8622596	9.4795563	9.4876794
22	308 3 1.2	1 34 52.4	+2 55.0	−2 41 14.7	−3 25.8	9.8622894	9.4970371	9.5074521
26	314 22 34.8	1 34 54.6	2 40.7	2 53 57.4	2 55.2	9.8622829	9.5187505	9.5307680
30	320 42 18.8	1 34 57.5	2 18.6	3 4 33.2	2 22.5	9.8622404	9.5433541	9.5563724
Aug. 3	327 2 15.9	1 35 1.1	1 49.7	3 12 54.4	1 48.0	9.8621623	9.5697023	9.5832385
7	333 22 28.3	1 35 5.2	1 15.5	3 18 54.9	1 12.1	9.8620496	9.5968899	9.6105783
11	339 42 58.0	1 35 9.7	+0 37.6	−3 22 29.9	−0 35.2,	9.8619034	9.6242368	9.6378104
15	346 3 46.5	1 35 14.6	−0 2.1	3 23 36.3	+0 2.1	9.8617256	9.6512555	9.6645361
19	352 24 55.3	1 35 19.8	0 41.9	3 22 13.3	0 39.4	9.8615182	9.6776241	9.6905001
23	358 46 25.4	1 35 25.2	1 19.6	3 18 21.4	1 16.4	9.8612837	9.7031508	9.7155652
27	5 8 17.6	1 35 30.9	1 53.4	3 12 2.9	1 52.7	9.8610249	9.7277393	9.7396697
31	11 30 32.6	1 35 36.7	−2 21.7	−3 3 21.9	+2 27.6	9.8607449	9.7513559	9.7627983
Sept. 4	17 53 11.2	1 35 42.7	2 43.0	2 52 24.4	3 0.8	9.8604472	9.7739990	9.7849592
8	24 16 14.1	1 35 48.8	2 56.4	2 39 18.0	3 32.0	9.8601353	9.7956801	9.8061643
12	30 39 41.8	1 35 55.1	3 1.0	2 24 11.8	4 0.6	9.8598130	9.8164139	9.8264328
16	37 3 35.0	1 36 1.6	2 56.6	2 7 16.6	4 26.4	9.8594844	9.8362256	9.8457955
20	43 27 54.4	1 36 8.2	−2 43.4	−1 48 44.7	+4 48.9	9.8591533	9.8551484	9.8642898
24	49 52 40.9	1 36 15.0	2 22.1	1 28 49.6	5 8.0	9.8588241	9.8732260	9.8819643
28	56 17 54.9	1 36 22.0	1 53.6	1 7 45.8	5 23.2	9.8585008	9.8905110	9.8988725
Oct. 2	62 43 37.1	1 36 29.2	1 19.3	0 45 49.2	5 34.4	9.8581875	9.9070533	9.9150593
6	69 9 48.0	1 36 36.4	0 41.1	0 23 16.3	5 41.4	9.8578882	9.9228942	9.9305622
10	75 36 27.9	1 36 43.6	−0 0.7	−0 0 23.5	+5 44.1	9.8576068	9.9380664	9.9454095
14	82 3 36.7	1 36 50.8	+0 39.8	+0 22 31.2	5 42.5	9.8573468	9.9525952	9.9596271
18	88 31 14.1	1 36 57.8	1 18.3	0 45 10.1	5 36.4	9.8571116	9.9665079	9.9732417
22	94 59 19.1	1 37 4.6	1 52.9	1 7 16.1	5 25.9	9.8569043	9.9798328	9.9862857
26	101 27 50.5	1 37 11.0	2 21.7	1 28 31.7	5 11.2	9.8567274	9.9926047	9.9987939
30	107 56 46.4	1 37 16.8	+2 43.3	+1 48 40.4	+4 52.5	9.8565835	0.0048572	0.0107986
Nov. 3	114 26 4.3	1 37 21.9	2 56.7	2 7 26.5	4 29.9	9.8564743	0.0166203	0.0223253
7	120 55 41.0	1 37 26.2	3 1.0	2 24 35.0	4 3.8	9.8564014	0.0279153	0.0333921
11	127 25 32.8	1 37 29.5	2 56.0	2 39 52.6	3 34.5	9.8563658	0.0387576	0.0440130
15	133 55 35.5	1 37 31.6	2 42.0	2 53 7.1	3 2.3	9.8563676	0.0491604	0.0542018
19	140 25 44.2	1 37 32.5	+2 19.7	+3 4 8.1	+2 27.8	9.8564072	0.0591391	0.0639756
23	146 55 53.8	1 37 32.0	1 50.3	3 12 47.1	1 51.4	9.8564840	0.0687136	0.0733562
27	153 25 58.8	1 37 30.2	1 15.2	3 18 57.4	1 13.6	9.8565970	0.0779059	0.0823653
Dec. 1	159 55 53.7	1 37 27.0	+0 36.3	3 22 34.5	+0 34.9	9.8567446	0.0867368	0.0910221
5	166 25 32.6	1 37 22.3	−0 4.4	3 23 35.7	−0 4.2	9.8569250	0.0952227	0.0993397
9	172 54 50.5	1 37 16.3	−0 44.9	+3 22 0.7	−0 43.2	9.8571358	0.1033742	0.1073269
13	179 23 41.9	1 37 9.1	1 23.1	3 17 51.1	1 21.4	9.8573741	0.1111988	0.1149910
17	185 52 2.1	1 37 0.8	1 57.0	3 11 10.6	1 58.5	9.8576369	0.1187047	0.1223409
21	192 19 46.9	1 36 51.5	2 24.8	3 2 5.1	2 33.9	9 8579209	0.1259016	0.1293891
25	198 46 53.1	1 36 41.5	2 45.3	2 50 42.1	3 7.2	9.8582222	0.1328053	0.1361521
29	205 13 18.2	1 36 30.9	−2 57.6	+2 37 10.8	−3 38.0	9.8585373	0.1394313	0.1426446
33	211 39 0.1	1 36 20.0	−3 0.9	+2 21 42.3	−4 5.9	9.8588619	0.1457934	0.1488783

MARS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
Jan. 0	195 2 14.0	27 31.47	−49.7	+1 1 35.0	−44.37	0.2108204	0.2961390	0.2923205
4	196 52 33.9	27 38.57	48.3	0 58 35.2	45.51	0.2098880	0.2884393	0.2844959
8	198 43 22.9	27 45.90	46.7	0 55 30.9	46.60	0.2089209	0.2804900	0.2764215
12	200 34 41.5	27 53.50	44.9	0 52 22.4	47.65	0.2079192	0.2722904	0.2680963
16	202 26 31.4	28 1.46	42.8	0 49 9.7	48.69	0.2068837	0.2638385	0.2595159
20	204 18 53.6	28 9.71	−40.5	+0 45 52.9	−49.69	0.2058155	0.2551280	0.2506735
24	206 11 49.3	28 18.25	38.1	0 42 32.2	50.66	0.2047147	0.2461519	0.2415631
28	208 5 20.0	28 27.14	35.5	0 39 7.6	51.61	0.2035823	0.2369067	0.2321826
Feb. 1	209 59 26.8	28 36.29	32.8	0 35 39.3	52.50	0.2024195	0.2273917	0.2225344
5	211 54 10.7	28 45.67	29.9	0 32 7.6	53.35	0.2012271	0.2176099	0.2126194
9	213 49 32.6	28 55.35	−26.7	+0 28 32.5	−54.16	0.2000057	0.2075622	0.2024382
13	215 45 33.9	29 5.34	23.5	0 24 54.3	54.94	0.1987567	0.1972464	0.1919861
17	217 42 15.7	29 15.59	20.2	0 21 13.0	55.66	0.1974809	0.1866562	0.1812555
21	219 39 39.0	29 26.10	16.7	0 17 29.0	56.33	0.1961795	0.1757834	0.1702391
25	221 37 44.9	29 36.89	13.2	0 13 42.4	56.96	0.1948538	0.1646229	0.1589347
29	223 36 34.5	29 47.96	− 9.5	+0 9 53.3	−57.52	0.1935050	0.1531738	0.1473417
Mar. 4	225 36 8.9	29 59.27	5.8	0 6 2.2	58.03	0.1921342	0.1414388	0.1354652
8	227 36 29.1	30 10.83	− 2.1	+0 2 9.1	58.49	0.1907429	0.1294204	0.1233044
12	229 37 36.0	30 22.65	+ 1.7	−0 1 45.7	58.86	0.1893324	0.1171164	0.1108554
16	231 39 30.5	30 34.65	5.4	0 5 41.8	59.17	0.1879044	0.1045201	0.0981094
20	233 42 13.5	30 46.87	+ 9.4	−0 9 39.1	−59.42	0.1864606	0.0916224	0.0850578
24	235 45 45.9	30 59.37	13.1	0 13 37.2	59.60	0.1850023	0.0784157	0.0716958
28	237 50 8.6	31 12.02	16.8	0 17 35.9	59.70	0.1835313	0.0648988	0.0580246
Apr. 1	239 55 22.3	31 24.86	20.5	0 21 34.8	59.71	0.1820493	0.0510744	0.0440489
5	242 1 27.8	31 37.88	24.1	0 25 33.6	59.64	0.1805584	0.0369477	0.0297707
9	244 8 25.6	31 51.02	+27.6	−0 29 32.0	−59.50	0.1790603	0.0225173	0.0151870
13	246 16 16.2	32 4.32	31.0	0 33 29.6	59.25	0.1775571	0.0077779	0.0002888
17	248 25 0.4	32 17.78	34.2	0 37 26.0	58.91	0.1760507	9.9927191	9.9850673
21	250 34 38.6	32 31.33	37.2	0 41 20.9	58.49	0.1745435	9.9773340	9.9695190
25	252 45 11.2	32 44.94	40.1	0 45 13.9	57.95	0.1730374	9.9616232	9.9536475
29	254 56 38.3	32 58.64	+42.8	−0 49 4.5	−57.31	0.1715349	9.9455932	9.9374625
May 3	257 9 0.4	33 12.41	45.2	0 52 52.4	56.56	0.1700384	9.9292567	9.9209762
7	259 22 17.6	33 26.21	47.3	0 56 37.0	55.71	0.1685498	9.9126212	9.9041927
11	261 36 30.1	33 39.98	49.0	1 0 18.1	54.76	0.1670721	9.8956902	9.8871130
15	263 51 37.4	33 53.69	50.6	1 3 55.1	53.69	0.1656071	9.8784618	9.8697380
19	266 7 39.5	34 7.36	+52.0	−1 7 27.6	−52.50	0.1641584	9.8609422	9.8520774
23	268 24 36.2	34 20.97	53.0	1 10 55.1	51.20	0.1627278	9.8431476	9.8341577
27	270 42 27.1	34 34.48	53.6	1 14 17.2	49.77	0.1613184	9.8251128	9.8160196
31	273 1 11.9	34 47.88	53.9	1 17 33.3	48.21	0.1599325	9.8068832	9.7977110
June 4	275 20 49.9	35 1.07	53.8	1 20 42.9	46.56	0.1585730	9.7885087	9.7792818
8	277 41 20.3	35 14.04	+53.4	−1 23 45.8	−44.81	0.1572425	9.7700374	9.7607812
12	280 2 42.3	35 26.85	52.6	1 26 41.3	42.89	0.1559437	9.7515229	9.7422735
16	282 24 54.7	35 39.35	51.4	1 29 28.9	40.87	0.1546797	9.7330432	9.7238443
20	284 47 56.5	35 51.55	49.9	1 32 8.3	38.75	0.1534524	9.7146961	9.7056179
24	287 11 46.5	36 3.42	48.0	1 34 38.9	36.50	0.1522655	9.6966291	9.6877536
28	289 36 23.4	36 14.94	+45.9	−1 37 0.3	−34.14	0.1511212	9.6790137	9.6704350
July 2	292 1 45.7	36 26.09	+43.3	−1 39 12.0	−31.67	0.1500219	9.6620424	9.6538609

MARS.

GREENWICH MEAN NOON.

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							At Date.	At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
July 2	292 1 45.7	36 26.09	+43.3	−1 39 12.0	−31.67	0.1500219	9.6620424	9.6538609
6	294 27 51.6	36 36.76	40.3	1 41 13.7	29.11	0.1489703	9.6459201	9.6382445
10	296 54 30.2	36 46.96	37.1	1 43 4.9	26.45	0.1479691	9.6308639	9.6238112
14	299 22 6.6	36 56.70	33.7	1 44 45.3	23.70	0.1470207	9.6171179	9.6108209
18	301 50 12.1	37 5.93	30.0	1 46 14.5	20.85	0.1461273	9.6049543	9.5995573
22	304 18 53.2	37 14.54	+25.9	−1 47 32.1	−17.94	0.1452911	9.5946637	9.5903097
26	306 48 7.6	37 22.59	21.8	1 48 38.0	14.95	0.1445144	9.5865234	9.5833311
30	309 17 53.1	37 30.05	17.4	1 49 31.7	11.87	0.1437990	9.5807521	9.5788018
Aug. 3	311 48 7.1	37 36.82	12.9	1 50 13.0	8.76	0.1431472	9.5774888	9.5768176
7	314 18 46.9	37 42.99	8.2	1 50 41.8	5.61	0.1425604	9.5767877	9.5773961
11	316 49 49.6	37 48.35	+ 3.6	−1 50 57.9	− 2.41	0.1420403	9.5786353	9.5804963
15	319 21 12.8	37 53.09	− 1.2	1 51 1.1	+ 0.81	0.1415882	9.5829630	9.5860181
19	321 52 53.4	37 57.08	5.9	1 50 51.4	4.05	0.1412055	9.5896399	9.5938010
23	324 24 48.5	38 0.33	10.6	1 50 28.7	7.30	0.1408929	9.5984733	9.6036232
27	326 56 55.1	38 2.87	15.2	1 49 53.0	10.54	0.1406517	9.6092135	9.6152085
31	329 29 10.4	38 4.65	−19.7	−1 49 4.4	+13.76	0.1404824	9.6215707	9.6282647
Sept. 4	332 1 31.3	38 5.63	24.1	1 48 2.9	16.97	0.1403856	9.6352556	9.6425125
8	334 33 54.4	38 5.79	28.3	1 46 48.6	20.15	0.1403612	9.6500070	9.6577133
12	337 6 16.6	38 5.22	32.3	1 45 21.7	23.25	0.1404095	9.6656075	9.6736657
16	339 38 35.1	38 3.91	35.8	1 43 42.6	26.30	0.1405305	9.6818683	9.6901934
20	342 10 46.8	38 1.82	−39.2	−1 41 51.3	+29.30	0.1407238	9.6986217	9.7071344
24	344 42 48.6	37 58.98	42.5	1 39 48.2	32.22	0.1409888	9.7157123	9.7243378
28	347 14 37.6	37 55.37	45.3	1 37 33.5	35.06	0.1413248	9.7329942	9.7416698
Oct. 2	349 46 10.5	37 51.00	47.6	1 35 7.7	37.79	0.1417308	9.7503511	9.7590295
6	352 17 24.6	37 45.98	49.6	1 32 31.2	40.43	0.1422057	9.7676976	9.7763490
10	354 48 17.4	37 40.93	−51.2	−1 29 44.3	+42.96	0.1427483	9.7849782	9.7935820
14	357 18 45.6	37 33.76	52.6	1 26 47.5	45.36	0.1433573	9.8021558	9.8106955
18	359 48 46.7	37 26.69	53.4	1 23 41.4	47.65	0.1440310	9.8191959	9.8276535
22	2 18 18.3	37 18.99	53.9	1 20 26.3	49.82	0.1447673	9.8360625	9.8444188
26	4 47 17.8	37 10.66	53.9	1 17 2.8	51.85	0.1455644	9.8527186	9.8609591
30	7 15 42.9	37 1.80	−53.5	−1 13 31.5	+53.74	0.1464206	9.8691355	9.8772487
Nov. 3	9 43 31.5	36 52.40	52.8	1 9 52.9	55.50	0.1473335	9.8852963	9.8932800
7	12 10 41.4	36 42.47	51.5	1 6 7.5	57.11	0.1483005	9.9011998	9.9090559
11	14 37 10.7	36 32.09	49.9	1 2 16.0	58.59	0.1493197	9.9168482	9.9245774
15	17 2 57.5	36 21.25	48.2	0 58 18.8	59.94	0.1503886	9.9322438	9.9398453
19	19 28 0.1	36 9.96	−46.0	−0 54 16.5	+61.12	0.1515044	9.9473813	9.9548500
23	21 52 16.7	35 58.31	43.5	0 50 9.8	62.17	0.1526645	9.9622501	9.9695801
27	24 15 46.1	35 46.34	40.6	0 45 59.1	63.09	0.1538666	9.9768401	9.9840296
Dec. 1	26 38 27.0	35 34.02	37.5	0 41 45.1	63.84	0.1551076	9.9911491	9.9981998
5	29 0 18.1	35 21.45	34.2	0 37 28.4	64.47	0.1563852	0.0051821	0.0120978
9	31 21 18.3	35 8.65	−30.8	−0 33 9.3	+65.00	0.1576966	0.0189484	0.0257342
13	33 41 26.8	34 55.58	27.0	0 28 48.4	65.36	0.1590390	0.0324549	0.0391106
17	36 0 42.7	34 42.36	23.1	0 24 26.4	65.50	0.1604094	0.0457022	0.0522275
21	38 19 5.5	34 28.99	19.1	0 20 3.7	65.71	0.1618055	0.0586864	0.0650781
25	40 36 34.4	34 15.50	15.0	0 15 40.7	65.72	0.1632243	0.0714018	0.0776575
29	42 53 9.3	34 1.91	−10.9	−0 11 17.9	+65.61	0.1646631	0.0838462	0.0899683
33	45 8 49.5	33 48.96	− 6.7	−0 6 55.8	+65.39	0.1661198	0.0960249	

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GREENWICH MEAN NOON.

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							At Date.	At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
Jan. 0	353 38 38.0	5 28.83	+14.1	−1 15 39.2	−2.02	0.6955475	0.7255382	0.7278311
4	354 0 33.4	5 28.89	13.8	1 15 47.2	1.98	0.6955061	0.7300765	0.7322737
8	354 22 29.1	5 28.96	13.5	1 15 55.1	1.93	0.6954655	0.7344216	0.7365193
12	354 44 25.1	5 29.02	13.2	1 16 2.7	1.89	0.6954256	0.7385661	0.7405615
16	355 6 21.3	5 29.08	12.9	1 16 10.2	1.84	0.6953867	0.7425047	0.7443952
20	355 28 17.8	5 29.14	+12.6	−1 16 17.4	−1.79	0.6953485	0.7462324	0.7480156
24	355 50 14.4	5 29.19	12.3	1 16 24.5	1.75	0.6953112	0.7497441	0.7514170
28	356 12 11.3	5 29.25	12.0	1 16 31.4	1.70	0.6952747	0.7530338	0.7545936
Feb. 1	356 34 8.4	5 29.30	11.7	1 16 38.1	1.65	0.6952389	0.7560960	0.7575405
5	356 56 5.7	5 29.36	11.4	1 16 44.6	1.60	0.6952039	0.7589270	0.7602552
9	357 18 3.3	5 29.42	+11.1	−1 16 51.0	−1.56	0.6951698	0.7615251	0.7627364
13	357 40 1.0	5 29.47	10.7	1 16 57.1	1.51	0.6951364	0.7638891	0.7649834
17	358 1 59.0	5 29.52	10.4	1 17 3.1	1.47	0.6951038	0.7660191	0.7669957
21	358 23 57.2	5 29.57	10.1	1 17 8.8	1.42	0.6950720	0.7679130	0.7687708
25	358 45 55.6	5 29.62	9.8	1 17 14.4	1.37	0.6950409	0.7695688	0.7703068
29	359 7 54.2	5 29.66	+ 9.4	−1 17 19.8	−1.33	0.6950106	0.7709846	0.7716019
Mar. 4	359 29 52.9	5 29.71	9.1	1 17 25.1	1.28	0.6949811	0.7721593	0.7726563
8	359 51 51.8	5 29.75	8.8	1 17 30.1	1.23	0.6949524	0.7730935	0.7734710
12	0 13 50.9	5 29.79	8.5	1 17 34.9	1.19	0.6949245	0.7737890	0.7740478
16	0 35 50.1	5 29.83	8.1	1 17 39.6	1.14	0.6948974	0.7742474	0.7743877
20	0 57 49.5	5 29.88	+ 7.8	−1 17 44.0	−1.09	0.6948711	0.7744687	0.7744904
24	1 19 49.1	5 29.92	7.5	1 17 48.3	1.04	0.6948456	0.7744526	0.7743554
28	1 41 48.9	5 29.96	7.1	1 17 52.4	1.00	0.6948210	0.7741987	0.7739825
Apr. 1	2 3 48.8	5 30.00	6.8	1 17 56.3	0.95	0.6947971	0.7737071	0.7733729
5	2 25 48.8	5 30.03	6.4	1 18 0.0	0.90	0.6947741	0.7729803	0.7725295
9	2 47 49.0	5 30.06	+ 6.1	−1 18 3.5	−0.85	0.6947520	0.7720209	0.7714549
13	3 9 49.3	5 30.09	5.8	1 18 6.8	0.80	0.6947307	0.7708316	0.7701511
17	3 31 49.7	5 30.12	5.4	1 18 9.9	0.76	0.6947102	0.7694136	0.7686191
21	3 53 50.2	5 30.15	5.1	1 18 12.8	0.71	0.6946905	0.7677677	0.7668593
25	4 15 50.8	5 30.18	4.7	1 18 15.6	0.66	0.6946717	0.7658942	0.7648726
29	4 37 51.7	5 30.21	+ 4.4	−1 18 18.1	−0.61	0.6946537	0.7637950	0.7626616
May 3	4 59 52.6	5 30.24	4.1	1 18 20.4	0.56	0.6946365	0.7614731	0.7602300
7	5 21 53.6	5 30.27	3.7	1 18 22.6	0.52	0.6946201	0.7589329	0.7575822
11	5 43 54.7	5 30.30	3.4	1 18 24.6	0.47	0.6946046	0.7561782	0.7547214
15	6 5 55.9	5 30.32	3.0	1 18 26.4	0.42	0.6945899	0.7532119	0.7516501
19	6 27 57.2	5 30.33	+ 2.7	−1 18 27.9	−0.37	0.6945760	0.7500361	0.7483701
23	6 49 58.6	5 30.35	2.3	1 18 29.3	0.32	0.6945629	0.7466527	0.7448845
27	7 12 0.0	5 30.37	2.0	1 18 30.5	0.28	0.6945507	0.7430662	0.7411984
31	7 34 1.6	5 30.39	1.7	1 18 31.5	0.23	0.6945393	0.7392821	0.7373180
June 4	7 56 3.1	5 30.40	1.3	1 18 32.3	0.18	0.6945287	0.7353070	0.7332502
8	8 18 4.8	5 30.42	+ 0.9	−1 18 33.0	−0.13	0.6945189	0.7311482	0.7290016
12	8 40 6.5	5 30.44	0.6	1 18 33.4	0.08	0.6945100	0.7268113	0.7245781
16	9 2 8.3	5 30.45	+ 0.3	1 18 33.6	−0.03	0.6945019	0.7223028	0.7199860
20	9 24 10.1	5 30.47	− 0.1	1 18 33.7	+0.01	0.6944946	0.7176289	0.7152325
24	9 46 12.0	5 30.48	0.4	1 18 33.5	0.06	0.6944882	0.7127984	0.7103278
28	10 8 13.9	5 30.48	− 0.8	−1 18 33.2	+0.11	0.6944826	0.7078226	0.7052842
July 2	10 30 15.9	5 30.48	− 1.1	−1 18 32.6	+0.16	0.6944778	0.7027144	0.7001150

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GREENWICH MEAN NOON.

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							At Date.	At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
July 2	10 30 15.9	5 30.48	− 1.1	−1 18 32.6	+0.16	0.6944778	0.7027144	0.7001150
6	10 52 17.8	5 30.49	1.5	1 18 31.9	0.21	0.6944739	0.6974876	0.6948340
10	11 14 19.8	5 30.49	1.8	1 18 31.0	0.26	0.6944708	0.6921558	0.6894547
14	11 36 21.8	5 30.50	2.2	1 18 29.8	0.30	0.6944685	0.6867327	0.6839915
18	11 58 23.8	5 30.50	2.5	1 18 28.5	0.35	0.6944670	0.6812337	0.6784614
22	12 20 25.8	5 30.51	− 2.9	−1 18 27.0	+0.40	0.6944664	0.6756777	0.6728850
26	12 42 27.8	5 30.51	3.2	1 18 25.3	0.45	0.6944666	0.6700867	0.6672856
30	13 4 29.8	5 30.51	3.6	1 18 23.4	0.50	0.6944676	0.6644851	0.6616884
Aug. 3	13 26 31.9	5 30.51	3.9	1 18 21.3	0.55	0.6944694	0.6588987	0.6561192
7	13 48 33.9	5 30.50	4.2	1 18 19.1	0.59	0.6944720	0.6533534	0.6506045
11	14 10 35.9	5 30.49	− 4.6	−1 18 16.6	+0.64	0.6944754	0.6478761	0.6451717
15	14 32 37.8	5 30.48	4.9	1 18 13.9	0.69	0.6944796	0.6424957	0.6398519
19	14 54 39.7	5 30.47	5.3	1 18 11.1	0.74	0.6944847	0.6372449	0.6346789
23	15 16 41.6	5 30.46	5.6	1 18 8.0	0.79	0.6944906	0.6321590	0.6296900
27	15 38 43.5	5 30.46	5.9	1 18 4.8	0.83	0.6944974	0.6272765	0.6249232
31	16 0 45.3	5 30.45	− 6.3	−1 18 1.3	+0.88	0.6945050	0.6226344	0.6204147
Sept. 4	16 22 47.1	5 30.44	6.6	1 17 57.7	0.93	0.6945134	0.6182685	0.6162003
8	16 44 48.8	5 30.43	6.9	1 17 53.8	0.98	0.6945226	0.6142145	0.6123153
12	17 6 50.5	5 30.41	7.3	1 17 49.9	1.03	0.6945328	0.6105073	0.6087950
16	17 28 52.1	5 30.39	7.6	1 17 45.7	1.08	0.6945438	0.6071829	0.6056755
20	17 50 53.6	5 30.37	− 7.9	−1 17 41.3	+1.12	0.6945556	0.6042769	0.6029915
24	18 12 55.1	5 30.35	8.3	1 17 36.7	1.17	0.6945683	0.6018225	0.6007737
28	18 34 56.4	5 30.33	8.6	1 17 31.9	1.22	0.6945818	0.5998475	0.5990469
Oct. 2	18 56 57.7	5 30.31	8.9	1 17 26.9	1.26	0.6945961	0.5983736	0.5978297
6	19 18 58.9	5 30.29	9.3	1 17 21.8	1.31	0.6946112	0.5974166	0.5971360
10	19 41 0.0	5 30.27	− 9.6	−1 17 16.4	+1.36	0.6946272	0.5969885	0.5969751
14	20 3 1.0	5 30.25	9.9	1 17 10.9	1.41	0.6946440	0.5970963	0.5973531
18	20 25 2.0	5 30.22	10.3	1 17 5.1	1.45	0.6946616	0.5977446	0.5982707
22	20 47 2.8	5 30.18	10.6	1 16 59.2	1.50	0.6946800	0.5989296	0.5997203
26	21 9 3.4	5 30.15	10.9	1 16 53.2	1.55	0.6946992	0.6006400	0.6016868
30	21 31 4.0	5 30.12	−11.2	−1 16 46.9	+1.59	0.6947192	0.6028571	0.6041480
Nov. 3	21 53 4.4	5 30.08	11.5	1 16 40.4	1.64	0.6947400	0.6055561	0.6070781
7	22 15 4.6	5 30.05	11.8	1 16 33.7	1.69	0.6947616	0.6087101	0.6104486
11	22 37 4.8	5 30.02	12.2	1 16 26.9	1.73	0.6947841	0.6122895	0.6142291
15	22 59 4.8	5 29.98	12.5	1 16 19.9	1.78	0.6948073	0.6162628	0.6183865
19	23 21 4.6	5 29.95	−12.8	−1 16 12.7	+1.83	0.6948314	0.6205951	0.6228839
23	23 43 4.4	5 29.92	13.1	1 16 5.3	1.87	0.6948563	0.6252477	0.6276813
27	24 5 4.0	5 29.88	13.4	1 15 57.7	1.92	0.6948820	0.6301795	0.6327371
Dec. 1	24 27 3.4	5 29.84	13.7	1 15 49.9	1.97	0.6949086	0.6353494	0.6380114
5	24 49 2.7	5 29.79	14.0	1 15 42.0	2.01	0.6949360	0.6407187	0.6434664
9	25 11 1.8	5 29.75	−14.3	−1 15 33.8	+2.06	0.6949641	0.6462506	0.6490668
13	25 33 0.6	5 29.70	14.6	1 15 25.5	2.11	0.6949931	0.6519109	0.6547787
17	25 54 59.4	5 29.66	14.9	1 15 17.0	2.15	0.6950229	0.6576658	0.6605677
21	26 16 57.9	5 29.61	15.2	1 15 8.2	2.20	0.6950534	0.6634804	0.6663999
25	26 38 56.2	5 29.56	15.5	1 14 59.4	2.25	0.6950848	0.6693223	0.6722434
29	27 0 54.4	5 29.52	−15.7	−1 14 50.3	+2.29	0.6951170	0.6751602	0.6780692
33	27 22 52.4	5 29.47	−16.0	−1 14 41.0	+2.34	0.6951499	0.6809677	

SATURN.

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	° ′ ″	′ ″	′ ″	° ′ ″	″			
Jan. 0	174 10 59.7	2 2.71	+1 21.9	+2 11 20.0	+2.55	0.9752582	0.9653974	0.9638599
4	174 19 10.5	2 2.68	1 21.6	2 11 30.1	2.54	0.9753136	0.9623278	0.9608038
8	174 27 21.2	2 2.65	1 21.4	2 11 40.2	2.52	0.9753689	0.9592898	0.9577879
12	174 35 31.7	2 2.62	1 21.1	2 11 50.3	2.51	0.9754243	0.9563001	0.9548284
16	174 43 42.1	2 2.59	1 20.9	2 12 0.3	2.50	0.9754797	0.9533747	0.9519410
20	174 51 52.4	2 2.56	+1 20.6	+2 12 10.3	+2.49	0.9755351	0.9505296	0.9491426
24	175 0 2.6	2 2.53	1 20.3	2 12 20.3	2.48	0.9755905	0.9477822	0.9464507
28	175 8 12.7	2 2.50	1 20.1	2 12 30.2	2.47	0.9756460	0.9451505	0.9438838
Feb. 1	175 16 22.6	2 2.47	1 19.8	2 12 40.0	2.45	0.9757015	0.9426528	0.9414597
5	175 24 32.4	2 2.44	1 19.5	2 12 49.8	2.44	0.9757570	0.9403065	0.9391953
9	175 32 42.1	2 2.40	+1 19.3	+2 12 59.5	+2.43	0.9758125	0.9381276	0.9371053
13	175 40 51.7	2 2.37	1 19.0	2 13 9.2	2.42	0.9758679	0.9361301	0.9352037
17	175 49 1.1	2 2.34	1 18.7	2 13 18.9	2.41	0.9759234	0.9343278	0.9335039
21	175 57 10.4	2 2.31	1 18.4	2 13 28.5	2.39	0.9759789	0.9327337	0.9320189
25	176 5 19.6	2 2.28	1 18.2	2 13 38.0	2.38	0.9760344	0.9313607	0.9307608
29	176 13 28.7	2 2.25	+1 17.9	+2 13 47.5	+2.37	0.9760899	0.9302200	0.9297397
Mar. 4	176 21 37.6	2 2.22	1 17.6	2 13 57.0	2.36	0.9761454	0.9293206	0.9289636
8	176 29 46.5	2 2.19	1 17.3	2 14 6.4	2.34	0.9762009	0.9286689	0.9284371
12	176 37 55.2	2 2.16	1 17.1	2 14 15.8	2.33	0.9762564	0.9282682	0.9281627
16	176 46 3.8	2 2.13	1 16.8	2 14 25.1	2.32	0.9763119	0.9281205	0.9281420
20	176 54 12.2	2 2.10	+1 16.5	+2 14 34.3	+2.31	0.9763674	0.9282269	0.9283752
24	177 2 20.6	2 2.07	1 16.2	2 14 43.6	2.30	0.9764229	0.9285866	0.9288610
28	177 10 28.8	2 2.04	1 15.9	2 14 52.7	2.29	0.9764785	0.9291975	0.9295958
Apr. 1	177 18 36.9	2 2.01	1 15.6	2 15 1.9	2.28	0.9765340	0.9300547	0.9305731
5	177 26 44.8	2 1.98	1 15.3	2 15 10.9	2.26	0.9765896	0.9311498	0.9317838
9	177 34 52.7	2 1.95	+1 15.0	+2 15 20.0	+2.25	0.9766452	0.9324735	0.9332174
13	177 43 0.4	2 1.91	1 14.7	2 15 29.0	2.24	0.9767008	0.9340142	0.9348623
17	177 51 8.0	2 1.88	1 14.4	2 15 37.9	2.23	0.9767563	0.9357604	0.9367072
21	177 59 15.5	2 1.85	1 14.1	2 15 46.8	2.21	0.9768119	0.9377009	0.9387398
25	178 7 22.8	2 1.82	1 13.8	2 15 55.6	2.20	0.9768675	0.9398220	0.9409458
29	178 15 30.1	2 1.79	+1 13.5	+2 16 4.4	+2.19	0.9769231	0.9421093	0.9433103
May 3	178 23 37.2	2 1.76	1 13.2	2 16 13.1	2.18	0.9769787	0.9445467	0.9458163
7	178 31 44.2	2 1.73	1 12.9	2 16 21.8	2.17	0.9770343	0.9471171	0.9484471
11	178 39 51.0	2 1.70	1 12.6	2 16 30.5	2.16	0.9770898	0.9498043	0.9511867
15	178 47 57.8	2 1.67	1 12.3	2 16 39.1	2.14	0.9771454	0.9525926	0.9540202
19	178 56 4.4	2 1.64	+1 12.0	+2 16 47.6	+2.13	0.9772010	0.9554676	0.9569328
23	179 4 10.9	2 1.61	1 11.7	2 16 56.1	2.12	0.9772566	0.9584136	0.9599084
27	179 12 17.3	2 1.58	1 11.4	2 17 4.6	2.11	0.9773122	0.9614151	0.9629315
31	179 20 23.5	2 1.55	1 11.1	2 17 13.0	2.10	0.9773678	0.9644559	0.9659862
June 4	179 28 29.7	2 1.52	1 10.7	2 17 21.4	2.08	0.9774233	0.9675207	0.9690575
8	179 36 35.7	2 1.49	+1 10.4	+2 17 29.7	+2.07	0.9774789	0.9705950	0.9721316
12	179 44 41.5	2 1.45	1 10.1	2 17 38.0	2.06	0.9775345	0.9736661	0.9751967
16	179 52 47.3	2 1.42	1 9.8	2 17 46.2	2.05	0.9775901	0.9767219	0.9782404
20	180 0 52.9	2 1.39	1 9.5	2 17 54.3	2.04	0.9776457	0.9797505	0.9812510
24	180 8 58.4	2 1.36	1 9.1	2 18 2.5	2.02	0.9777013	0.9827402	0.9842166
28	180 17 3.8	2 1.33	+1 8.8	+2 18 10.5	+2.01	0.9777568	0.9856790	0.9871258
July 2	180 25 9.1	2 1.30	+1 8.5	+2 18 18.6	+2.00	0.9778124	0.9885559	0.9899678

SATURN.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	′ ″	′ ″	° ′ ″	″			
July 2	180 25 9.1	2 1.30	+1 8.5	+2 18 18.6	+2.00	0.9778124	0.9885559	0.9899678
6	180 33 14.2	2 1.27	1 8.2	2 18 26.5	1.99	0.9778680	0.9913607	0.9927335
10	180 41 19.2	2 1.24	1 7.8	2 18 34.5	1.98	0.9779235	0.9940853	0.9954153
14	180 49 24.1	2 1.21	1 7.5	2 18 42.4	1.96	0.9779791	0.9967224	0.9980056
18	180 57 28.9	2 1.18	1 7.2	2 18 50.2	1.95	0.9780346	0.9992639	1.0004965
22	181 5 33.6	2 1.15	+1 6.8	+2 18 58.0	+1.94	0.9780902	1.0017024	1.0028806
26	181 13 38.1	2 1.12	1 6.5	2 19 5.7	1.93	0.9781458	1.0040302	1.0051502
30	181 21 42.5	2 1.09	1 6.2	2 19 13.4	1.92	0.9782013	1.0062401	1.0072990
Aug. 3	181 29 46.8	2 1.06	1 5.8	2 19 21.0	1.90	0.9782569	1.0083263	1.0093215
7	181 37 51.0	2 1.03	1 5.5	2 19 28.6	1.89	0.9783124	1.0102841	1.0112138
11	181 45 55.0	2 1.00	+1 5.1	+2 19 36.2	+1.88	0.9783679	1.0121098	1.0129716
15	181 53 59.0	2 0.97	1 4.8	2 19 43.7	1.87	0.9784235	1.0137986	1.0145905
19	182 2 2.8	2 0.94	1 4.5	2 19 51.1	1.86	0.9784791	1.0153465	1.0160659
23	182 10 6 5	2 0.91	1 4.1	2 19 58.5	1.84	0.9785346	1.0167484	1.0173934
27	182 18 10.1	2 0.87	1 3.8	2 20 5.9	1.83	0.9785901	1.0180006	1.0185695
31	182 26 13.5	2 0.84	+1 3.4	+2 20 13.2	+1.82	0.9786456	1.0190999	1.0195916
Sept. 4	182 34 16.8	2 0.81	1 3.1	2 20 20.5	1.81	0.9787012	1.0200445	1.0204585
8	182 42 20.0	2 0.78	1 2.7	2 20 27.7	1.80	0.9787568	1.0208332	1.0211681
12	182 50 23.1	2 0.75	1 2.4	2 20 34.8	1.78	0.9788123	1.0214631	1.0217182
16	182 58 26.0	2 0.72	1 2.0	2 20 41.9	1.77	0.9788678	1.0219331	1.0221073
20	183 6 28.8	2 0.69	+1 1.7	+2 20 49.0	+1.76	0.9789233	1.0222407	1.0223329
24	183 14 31.5	2 0.66	1 1.3	2 20 56.0	1.75	0.9789788	1.0223839	1.0223937
28	183 22 34.1	2 0.63	1 1.0	2 21 3.0	1.74	0.9790343	1.0223624	1.0222900
Oct. 2	183 30 36.6	2 0.60	1 0.6	2 21 9.9	1.72	0.9790898	1.0221767	1.0220226
6	183 38 39.0	2 0.57	1 0.2	2 21 16.8	1.71	0.9791453	1.0218277	1.0215917
10	183 46 41.2	2 0.54	+0 59.9	+2 21 23.6	+1.70	0.9792008	1.0213149	1.0209975
14	183 54 43.3	2 0.51	0 59.5	2 21 30.4	1.69	0.9792562	1.0206395	1.0202407
18	184 2 45.3	2 0.48	0 59.2	2 21 37.1	1.68	0.9793116	1.0198014	1.0193216
22	184 10 47.2	2 0.45	0 58.8	2 21 43.8	1.66	0.9793670	1.0188017	1.0182417
26	184 18 49.0	2 0.42	0 58.4	2 21 50.4	1.65	0.9794224	1.0176423	1.0170037
30	184 26 50.6	2 0.39	+0 58.1	+2 21 57.0	+1.64	0.9794779	1.0163263	1.0156109
Nov. 3	184 34 52.1	2 0.36	0 57.7	2 22 3.6	1.63	0.9795333	1.0148578	1.0140674
7	184 42 53.5	2 0.33	0 57.3	2 22 10.1	1.62	0.9795887	1.0132400	1.0123761
11	184 50 54.8	2 0 30	0 57.0	2 22 16.5	1.61	0.9796441	1.0114762	1.0105406
15	184 58 55.9	2 0.27	0 56.6	2 22 22.9	1.59	0.9796995	1.0095700	1.0085648
19	185 6 57.0	2 0.24	+0 56.2	+2 22 29.2	+1.58	0.9797549	1.0075259	1.0064540
23	185 14 57.9	2 0.21	0 55.9	2 22 35.5	1.57	0.9798103	1.0053500	1.0042147
27	185 22 58.7	2 0.18	0 55.5	2 22 41.8	1.56	0.9798656	1.0030493	1.0018547
Dec. 1	185 30 59.3	2 0.15	0 55.1	2 22 48.0	1.54	0.9799209	1.0006319	0.9993817
5	185 38 59.9	2 0.12	0 54.7	2 22 54.1	1.53	0.9799762	0.9981051	0.9968032
9	185 47 0.3	2 0.09	+0 54.4	+2 23 0.2	+1.52	0.9800314	0.9954770	0.9941272
13	185 55 0.7	2 0.07	0 54.0	2 23 6.3	1.51	0.9800867	0.9927553	0.9913625
17	186 3 0.9	2 0.04	0 53.6	2 23 12.3	1.50	0.9801419	0.9899502	0.9885196
21	186 11 1.0	2 0.01	0 53.2	2 23 18.3	1.48	0.9801971	0.9870724	0.9856102
25	186 19 0.9	1 59.98	0 52.9	2 23 24.2	1.47	0.9802523	0.9841345	0.9826471
29	186 27 0.8	1 59.95	+0 52.5	+2 23 30.1	+1.46	0.9803075	0.9811495	0.9796432
33	186 35 0.5	1 59.93	+0 52.1	+2 23 35.9	+1.45	0.9803627	0.9781300	

URANUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	″	″	° ′ ″	″			
Jan. 4	212 40 5.1	45.42	−9.3	+0 30 19.5	−0.46	1.2674720	1.2754493	1.2739623
12	212 46 8.4	45.41	9.3	0 30 15.8	0.46	1.2674957	1.2724373	1.2708809
20	212 52 11.6	45.40	9.3	0 30 12.1	0.46	1.2675194	1.2692998	1.2677008
28	212 58 14.8	45.40	9.3	0 30 8.4	0.46	1.2675432	1.2660916	1.2644805
Feb. 5	213 4 18.0	45.39	9.2	0 30 4.6	0.47	1.2675670	1.2628758	1.2612858
13	213 10 21.1	45.39	−9.2	+0 30 0.9	−0.47	1.2675910	1.2597185	1.2581814
21	213 16 24.2	45.38	9.2	0 29 57.2	0.47	1.2676148	1.2566821	1.2552289
29	213 22 27.2	45.38	9.2	0 29 53.4	0.47	1.2676388	1.2538302	1.2524940
Mar. 8	213 28 30.2	45.37	9.2	0 29 49.7	0.47	1.2676629	1.2512280	1.2500387
16	218 34 33.2	45.37	9.2	0 29 45.9	0.47	1.2676870	1.2489324	1.2479152
24	213 40 36.1	45.36	−9.2	+0 29 42.2	−0.47	1.2677111	1.2469929	1.2461715
Apr. 1	213 46 38.9	45.35	9.2	0 29 38.4	0.47	1.2677353	1.2454559	1.2448506
9	213 52 41.7	45.35	9.2	0 29 34.7	0.47	1.2677596	1.2443580	1.2439805
17	213 58 44.5	45.34	9.2	0 29 30.8	0.47	1.2677839	1.2437199	1.2435778
25	214 4 47.2	45.34	9.2	0 29 27.1	0.47	1.2678082	1.2435555	1.2436529
May 3	214 10 49.9	45.33	−9.2	+0 29 23.3	−0.47	1.2678326	1.2438689	1.2442015
11	214 16 52.6	45.33	9.2	0 29 19.6	0.47	1.2678571	1.2446480	1.2452056
19	214 22 55.1	45.32	9.2	0 29 15.8	0.47	1.2678816	1.2458708	1.2466400
27	214 28 57.7	45.32	9.2	0 29 12.0	0.47	1.2679062	1.2475091	1.2484721
June 4	214 35 0.2	45.31	9.1	0 29 8.2	0.48	1.2679308	1.2495234	1.2506565
12	214 41 2.6	45.30	−9.1	+0 29 4.4	−0.48	1.2679554	1.2518652	1.2531432
20	214 47 5.0	45.30	9.1	0 29 0.6	0.48	1.2679801	1.2544842	1.2558812
28	214 53 7.4	45.29	9.1	0 28 56.7	0.48	1.2680049	1.2573270	1.2588137
July 6	214 59 9.7	45.29	9.1	0 28 52.9	0.48	1.2680297	1.2603337	1.2618798
14	215 5 12.0	45.28	9.1	0 28 49.1	0.48	1.2680546	1.2634450	1.2650228
22	215 11 14.2	45.28	−9.1	+0 28 45.3	−0.48	1.2680795	1.2666059	1.2681873
30	215 17 16.4	45.27	9.1	0 28 41.4	0.48	1.2681044	1.2697593	1.2713152
Aug. 7	215 23 18.6	45.27	9.1	0 28 37.6	0.48	1.2681295	1.2728486	1.2743536
15	215 29 20.7	45.26	9.1	0 28 33.7	0.48	1.2681546	1.2758245	1.2772554
23	215 35 22.7	45.25	9.1	0 28 29.9	0.48	1.2681797	1.2786406	1.2799741
31	215 41 24.7	45.25	−9.1	+0 28 26.0	−0.48	1.2682049	1.2812508	1.2824659
Sept. 8	215 47 26.7	45.24	9.1	0 28 22.2	0.48	1.2682301	1.2836151	1.2846945
16	215 53 28.6	45.24	9.1	0 28 18.3	0.48	1.2682554	1.2857011	1.2866296
24	215 59 30.5	45.23	9.1	0 28 14.5	0.48	1.2682807	1.2874763	1.2882382
Oct. 2	216 5 32.3	45.23	9.0	0 28 10.6	0.48	1.2683061	1.2889126	1.2894973
10	216 11 34.1	45.22	−9.0	+0 28 6.7	−0.48	1.2683316	1.2899907	1.2903904
18	216 17 35.9	45.21	9.0	0 28 2.8	0.49	1.2683571	1.2906945	1.2909013
26	216 23 37.6	45.21	9.0	0 27 58.9	0.49	1.2683826	1.2910100	1.2910198
Nov. 3	216 29 39.2	45.20	9.0	0 27 55.1	0.49	1.2684082	1.2909311	1.2907442
11	216 35 40.8	45.20	9.0	0 27 51.2	0.49	1.2684339	1.2904592	1.2900768
19	216 41 42.4	45.19	−9.0	+0 27 47.3	−0.49	1.2684596	1.2895972	1.2890221
27	216 47 43.9	45.19	9.0	0 27 43.4	0.49	1.2684853	1.2883538	1.2875947
Dec. 5	216 53 45.4	45.18	9.0	0 27 39.5	0.49	1.2685111	1.2867480	1.2858160
13	216 59 46.8	45.17	9.0	0 27 35.5	0.49	1.2685370	1.2848021	1.2837093
21	217 5 48.2	45.17	8.9	0 27 31.6	0.49	1.2685629	1.2825421	1.2813053
29	217 11 49.6	45.16	−8.9	+0 27 27.7	−0.49	1.2685889	1.2800042	1.2786444
37	217 17 50.9	45.16	−8.9	+0 27 23.8	−0.49	1.2686149		

NEPTUNE.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	″	″	° ′ ″	″			
Jan. 4	67 51 52.0	22.03	−40.5	−1 34 55.7	+0.31	1.4747539	1.4630769	1.4637308
12	67 54 48.2	22.03	40.6	1 34 53.2	0.31	1.4747557	1.4644391	1.4651979
20	67 57 44.4	22.03	40.6	1 34 50.7	0.31	1.4747576	1.4660029	1.4668504
28	68 0 40.6	22.03	40.7	1 34 48.2	0.31	1.4747594	1.4677349	1.4686523
Feb. 5	68 3 36.8	22.03	40.7	1 34 45.7	0.32	1.4747613	1.4695970	1.4705638
13	68 6 33.1	22.03	−40.8	−1 34 43.2	+0.32	1.4717632	1.4715480	1.4725446
21	68 9 29.3	22.03	40.8	1 34 40.6	0.32	1.4747650	1.4735487	1.4745556
29	68 12 25.5	22.03	40.9	1 34 38.1	0.32	1.4747669	1.4755602	1.4765571
Mar. 8	68 15 21.7	22.03	40.9	1 34 35.6	0.32	1.4747687	1.4775421	1.4785103
16	68 18 18.0	22.03	41.0	1 34 33.0	0.32	1.4747706	1.4794580	1.4803810
24	68 21 14.2	22.03	−41.0	−1 34 30.5	+0.32	1.4747725	1.4812755	1.4821374
Apr. 1	68 24 10.4	22.03	41.1	1 34 27.9	0.32	1.4747743	1.4829630	1.4837486
9	68 27 6.7	22.03	41.1	1 34 25.4	0.32	1.4747761	1.4844917	1.4851893
17	68 30 2.9	22.03	41.2	1 34 22.8	0.32	1.4747780	1.4858393	1.4864390
25	68 32 59.2	22.03	41.2	1 34 20.2	0.32	1.4747798	1.4869862	1.4874784
May 3	68 35 55.4	22.03	−41.3	−1 34 17.7	+0.32	1.4747817	1.4879144	1.4882922
11	68 38 51.7	22.03	41.3	1 34 15.1	0.32	1.4747835	1.4886113	1.4888706
19	68 41 47.9	22.03	41.3	1 34 12.5	0.32	1.4747853	1.4890693	1.4892066
27	68 44 44.2	22.03	41.4	1 34 9.9	0.32	1.4747872	1.4892821	1.4892951
June 4	68 47 40.4	22.03	41.4	1 34 7.4	0.32	1.4747890	1.4892462	1.4891358
12	68 50 36.7	22.03	−41.5	−1 34 4.7	+0.32	1.4747908	1.4889646	1.4887335
20	68 53 33.0	22.03	41.5	1 34 2.2	0.32	1.4747927	1.4884431	1.4880938
28	68 56 29.2	22.03	41.6	1 33 59.6	0.32	1.4747945	1.4876874	1.4872252
July 6	68 59 25.5	22.03	41.6	1 33 57.0	0.32	1.4747963	1.4867094	1.4861420
14	69 2 21.8	22.03	41.7	1 33 54.4	0.33	1.4747981	1.4855252	1.4848607
22	69 5 18.0	22.03	−41.7	−1 33 51.8	+0.33	1.4748000	1.4841513	1.4833991
30	69 8 14.3	22.03	41.8	1 33 49.2	0.33	1.4748018	1.4826076	1.4817796
Aug. 7	69 11 10.6	22.03	41.8	1 33 46.5	0.33	1.4748036	1.4809188	1.4800289
15	69 14 6.9	22.03	41.9	1 33 43.9	0.33	1.4748054	1.4791133	1.4781756
23	69 17 3.2	22.04	41.9	1 33 41.3	0.33	1.4748072	1.4772197	1.4762491
31	69 19 59.4	22.04	−41.9	−1 33 38.7	+0.33	1.4748090	1.4752689	1.4742838
Sept. 8	69 22 55.7	22.04	42.0	1 33 36.0	0.33	1.4748108	1.4732978	1.4723151
16	69 25 52.0	22.04	42.0	1 33 33.4	0.33	1.4748126	1.4713404	1.4703784
24	69 28 48.3	22.04	42.1	1 33 30.8	0.33	1.4748144	1.4694340	1.4685124
Oct. 2	69 31 44.6	22.04	42.1	1 33 28.1	0.33	1.4748162	1.4676180	1.4667558
10	69 34 40.9	22.04	−42.2	−1 33 25.5	+0.33	1.4748180	1.4659298	1.4651443
18	69 37 37.2	22.04	42.2	1 33 22.8	0.33	1.4748198	1.4644038	1.4637128
26	69 40 33.5	22.04	42.3	1 33 20.2	0.33	1.4748216	1.4630752	1.4624953
Nov. 3	69 43 29.8	22.04	42.3	1 33 17.5	0.33	1.4748233	1.4619758	1.4615197
11	69 46 26.1	22.04	42.4	1 33 14.8	0.33	1.4748251	1.4611297	1.4608087
19	69 49 22.4	22.04	−42.4	−1 33 12.2	+0.33	1.4748269	1.4605584	1.4603815
27	69 52 18.7	22.04	42.4	1 33 9.5	0.33	1.4748286	1.4602783	1.4602499
Dec. 5	69 55 15.0	22.04	42.5	1 33 6.8	0.33	1.4748304	1.4602959	1.4604164
13	69 58 11.3	22.04	42.5	1 33 4.1	0.34	1.4748322	1.4606107	1.4608789
21	70 1 7.6	22.04	42.6	1 33 1.5	0.34	1.4748339	1.4612185	1.4616284
29	70 4 3.9	22.04	−42.6	−1 32 58.8	+0.34	1.4748357	1.4621053	1.4626467
37	70 7 0.2	22.04	−42.7	−1 32 56.1	+0.34	1.4748374		

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Jan. 0	+0.1635747	+0.1721959	+637	−0.8894640	−0.8880895	+ 8	−0.3859161	−0.3853199	+258
1	0.1808034	0.1893967	625	0.8866454	0.8851321	15	0.3846935	0.3840371	262
2	0.1979754	0.2065380	613	0.8835496	0.8818981	22	0.3833506	0.3826342	266
3	0.2150842	0.2236131	602	0.8801777	0.8783688	30	0.3818879	0.3811118	269
4	0.2321242	0.2406168	591	0.8765314	0.8746056	38	0.3803058	0.3794703	272
5	+0.2490902	+0.2575439	+580	−0.8726115	−0.8705497	+ 46	−0.3786049	−0.3777102	+275
6	0.2659771	0.2743893	568	0.8684199	0.8662228	54	0.3767859	0.3758324	278
7	0.2827798	0.2911479	557	0.8639582	0.8616267	61	0.3748496	0.3738378	280
8	0.2994930	0.3078145	546	0.8592282	0.8567632	68	0.3727969	0.3717271	283
9	0.3161117	0.3243841	535	0.8542317	0.8516341	75	0.3706285	0.3695011	285
10	+0.3326311	+0.3408519	+523	−0.8489705	−0.8462412	+ 81	−0.3683452	−0.3671607	+287
11	0.3490461	0.3572129	512	0.8434463	0.8405864	87	0.3659478	0.3647066	289
12	0.3653519	0.3734625	500	0.8376612	0.8346715	93	0.3634373	0.3621398	291
13	0.3815440	0.3895960	489	0.8316171	0.8284985	98	0.3608145	0.3594611	292
14	0.3976178	0.4056089	477	0.8253157	0.8220692	103	0.3580801	0.3566714	293
15	+0.4135686	+0.4214965	+466	−0.8187590	−0.8153855	+108	−0.3552352	−0.3537715	+294
16	0.4293918	0.4372541	455	0.8119488	0.8084493	113	0.3522805	0.3507621	295
17	0.4450827	0.4528771	443	0.8048871	0.8012626	117	0.3492167	0.3476442	296
18	0.4606367	0.4683609	432	0.7975760	0.7938275	121	0.3460448	0.3444186	297
19	0.4760491	0.4837008	421	0.7900174	0.7861460	125	0.3427658	0.3410863	297
20	+0.4913152	+0.4988921	+410	−0.7822133	−0.7782201	+129	−0.3393804	−0.3376481	+297
21	0.5064305	0.5139302	399	0.7741660	0.7700519	132	0.3358896	0.3341049	297
22	0.5213902	0.5288103	388	0.7658777	0.7616439	135	0.3322942	0.3304577	297
23	0.5361894	0.5435275	377	0.7573508	0.7529986	138	0.3285953	0.3267075	296
24	0.5508233	0.5580768	366	0.7485877	0.7441184	141	0.3247941	0.3228554	296
25	+0.5652869	+0.5724535	+356	−0.7395910	−0.7350060	+143	−0.3208915	−0.3189025	+295
26	0.5795755	0.5866529	345	0.7303635	0.7256642	146	0.3168886	0.3148499	294
27	0.5936846	0.6006704	335	0.7209081	0.7160960	148	0.3127867	0.3106990	293
28	0.6076095	0.6145015	324	0.7112280	0.7063048	150	0.3085871	0.3064511	292
29	0.6213456	0.6281414	314	0.7013265	0.6962939	152	0.3042912	0.3021077	291
30	+0.6348881	+0.6415855	+304	−0.6912071	−0.6860667	+154	−0.2999007	−0.2976704	+290
31	0.6482326	0.6548295	294	0.6808730	0.6756266	155	0.2954171	0.2931407	288
Feb. 1	0.6613751	0.6678694	284	0.6703278	0.6649773	156	0.2908417	0.2885202	286
2	0.6743116	0.6807013	274	0.6595753	0.6541225	157	0.2861762	0.2838103	284
3	0.6870381	0.6933214	264	0.6486191	0.6430658	158	0.2814222	0.2790126	282
4	+0.6995509	+0.7057259	+255	−0.6374629	−0.6318111	+158	−0.2765813	−0.2741288	+279
5	0.7118463	0.7179112	246	0.6261107	0.6203624	159	0.2716552	0.2691608	277
6	0.7239207	0.7298740	236	0.6145665	0.6087237	159	0.2666458	0.2641104	274
7	0.7357709	0.7416111	227	0.6028342	0.5968988	159	0.2615548	0.2589793	271
8	0.7473940	0.7531194	218	0.5909175	0.5848913	159	0.2563839	0.2537691	268
9	+0.7587868	+0.7643959	+208	−0.5788201	−0.5727049	+159	−0.2511347	−0.2484813	+265
10	0.7699462	0.7754374	200	0.5665459	0.5603437	159	0.2458088	0.2431176	261
11	0.7808690	0.7862408	192	0.5540987	0.5478114	158	0.2404079	0.2376799	257
12	0.7915523	0.7968033	184	0.5414821	0.5351116	158	0.2349338	0.2321698	253
13	0.8019934	0.8071224	176	0.5287000	0.5222481	158	0.2293880	0.2265888	249
14	+0.8121898	+0.8171954	+168	−0.5157562	−0.5092249	+157	−0.2237722	−0.2209387	+245
15	+0.8221387	+0.8270194	+160	−0.5026546	−0.4960459	+157	−0.2180882	−0.2152211	+241

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Feb. 15	+0.8221387	+0.8270194	+160	−0.5026546	−0.4960459	+157	−0.2180882	−0.2152211	+241
16	0.8318370	0.8365913	153	0.4893989	0.4827146	156	0.2123374	0.2094375	237
17	0.8412818	0.8459080	145	0.4759930	0.4692349	155	0.2065215	0.2035896	233
18	0.8504697	0.8549668	138	0.4624406	0.4556105	154	0.2006421	0.1976791	228
19	0.8593987	0.8637652	131	0.4487454	0.4418455	153	0.1947008	0.1917075	224
20	+0.8680659	+0.8723005	+124	−0.4349116	−0.4279440	+152	−0.1886993	−0.1856766	+219
21	0.8764686	0.8805698	117	0.4209434	0.4139103	151	0.1826395	0.1795883	215
22	0.8846038	0.8885702	111	0.4068451	0.3997487	149	0.1765233	0.1734446	210
23	0.8924688	0.8962991	104	0.3926213	0.3854638	148	0.1703524	0.1672472	205
24	0.9000610	0.9037541	98	0.3782766	0.3710602	146	0.1641289	0.1609981	199
25	+0.9073781	+0.9109327	+ 92	−0.3638153	−0.3565424	+145	−0.1578547	−0.1546993	+194
26	0.9144176	0.9178326	86	0.3492420	0.3419148	143	0.1515318	0.1483528	188
27	0.9211773	0.9244518	80	0.3345613	0.3271822	142	0.1451621	0.1419605	183
28	0.9276554	0.9307883	75	0.3197780	0.3123495	140	0.1387477	0.1355246	177
29	0.9338500	0.9368404	69	0.3048970	0.2974216	139	0.1322909	0.1290473	171
Mar. 1	+0.9397593	+0.9426062	+ 64	−0.2899235	−0.2824037	+137	−0.1257937	−0.1225308	+165
2	0.9453813	0.9480841	59	0.2748625	0.2673008	135	0.1192584	0.1159772	159
3	0.9507146	0.9532729	54	0.2597190	0.2521178	133	0.1126872	0.1093889	153
4	0.9557585	0.9581718	49	0.2444977	0.2368596	131	0.1060824	0.1027681	147
5	0.9605122	0.9627800	45	0.2292037	0.2215310	129	0.0994461	0.0961168	140
6	+0.9649747	+0.9670965	+ 41	−0.2138418	−0.2061369	+127	−0.0927802	−0.0894369	+134
7	0.9691449	0.9711203	37	0.1984167	0.1906819	125	0.0860869	0.0827307	128
8	0.9730223	0.9748510	33	0.1829330	0.1751706	123	0.0793683	0.0760002	122
9	0.9766064	0.9782882	29	0.1673951	0.1596074	121	0.0726265	0.0692475	115
10	0.9798965	0.9814311	25	0.1518077	0.1439971	119	0.0658634	0.0624745	109
11	+0.9828920	+0.9842793	+ 22	−0.1361758	−0.1283445	+117	−0.0590809	−0.0556831	+102
12	0.9855927	0.9868325	19	0.1205088	0.1126541	115	0.0522811	0.0488754	95
13	0.9879985	0.9890906	16	0.1047960	0.0969301	113	0.0454661	0.0420534	88
14	0.9901089	0.9910531	13	0.0890568	0.0811769	111	0.0386376	0.0352189	81
15	0.9919234	0.9927196	10	0.0732907	0.0653990	108	0.0317975	0.0283738	74
16	+0.9934416	+0.9940895	+ 7	−0.0575022	−0.0496008	+106	−0.0249478	−0.0215200	+ 67
17	0.9946631	0.9951624	5	0.0416954	0.0337865	103	0.0180903	0.0146593	60
18	0.9955874	0.9959381	3	0.0258747	0.0179607	101	0.0112270	0.0077936	53
19	0.9962144	0.9964164	+ 1	−0.0100450	−0.0021283	98	−0.0043594	−0.0009250	46
20	0.9965439	0.9965970	− 1	+0.0057887	+0.0137058	96	+0.0025098	+0.0059445	39
21	+0.9965756	+0.9964798	− 2	+0.0216219	+0.0295371	+ 94	+0.0093791	+0.0128131	+ 32
22	0.9963095	0.9960648	3	0.0374503	0.0453611	92	0.0162465	0.0196787	25
23	0.9957456	0.9953520	4	0.0532690	0.0611729	89	0.0231097	0.0265391	18
24	0.9948839	0.9943413	5	0.0690728	0.0769676	87	0.0299666	0.0333920	11
25	0.9937243	0.9930330	6	0.0848570	0.0927402	84	0.0368151	0.0402355	+ 4
26	+0.9922673	+0.9914277	− 7	+0.1006167	+0.1084857	+ 82	+0.0436531	+0.0470674	− 3
27	0.9905137	0.9895260	7	0.1163468	0.1241991	79	0.0504783	0.0538855	10
28	0.9884642	0.9873288	8	0.1320423	0.1398755	76	0.0572887	0.0606877	17
29	0.9861196	0.9848370	8	0.1476983	0.1555101	73	0.0640822	0.0674719	24
30	0.9834810	0.9820518	8	0.1633101	0.1710978	70	0.0708565	0.0742358	31
31	+0.9805495	+0.9789744	− 8	+0.1788725	+0.1866336	+ 68	+0.0776094	+0.0809772	− 38
32	+0.9773265	+0.9756063	− 8	+0.1943805	+0.2021127	+ 65	+0.0843388	+0.0876941	− 45

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Apr. 1	+0.9773265	+0.9756063	− 8	+0.1943805	+0.2021127	+65	+0.0843388	+0.0876941	− 45
2	0.9738136	0.9719489	8	0.2098296	0.2175307	62	0.0910426	0.0943844	52
3	0.9700123	0.9680040	7	0.2252154	0.2328832	60	0.0977189	0.1010461	60
4	0.9659243	0.9637735	6	0.2405335	0.2481657	57	0.1043656	0.1076772	67
5	0.9615516	0.9592591	5	0.2557793	0.2633737	55	0.1109807	0.1142759	74
6	+0.9568961	+0.9544629	− 5	+0.2709484	+0.2785027	+52	+0.1175624	+0.1208402	− 81
7	0.9519597	0.9493868	4	0.2860363	0.2935485	49	0.1241089	0.1273683	88
8	0.9467443	0.9440327	− 2	0.3010390	0.3085071	46	0.1306183	0.1338585	95
9	0.9412520	0.9384027	0	0.3159525	0.3233745	43	0.1370888	0.1403089	102
10	0.9354847	0.9324986	+ 2	0.3307729	0.3381469	40	0.1435186	0.1467178	108
11	+0.9294442	+0.9263222	+ 4	+0.3454963	+0.3528205	+37	+0.1499062	+0.1530838	−115
12	0.9231325	0.9198757	7	0.3601190	0.3673914	34	0.1562501	0.1594052	122
13	0.9165518	0.9131612	10	0.3746370	0.3818556	31	0.1625486	0.1656802	129
14	0.9097040	0.9061805	13	0.3890463	0.3962090	28	0.1687998	0.1719071	135
15	0.9025909	0.8989355	16	0.4033428	0.4104475	25	0.1750020	0.1780842	142
16	+0.8952145	+0.8914282	+ 19	+0.4175224	+0.4245672	+22	+0.1811536	+0.1842099	−148
17	0.8875767	0.8836605	22	0.4315814	0.4385645	19	0.1872529	0.1902825	154
18	0.8796797	0.8756346	26	0.4455160	0.4524355	17	0.1932984	0.1963004	160
19	0.8715256	0.8673528	30	0.4593223	0.4661761	14	0.1992883	0.2022618	166
20	0.8631167	0.8588174	34	0.4729960	0.4797819	12	0.2052208	0.2081649	172
21	+0.8544555	+0.8500310	+ 38	+0.4865329	+0.4932489	+ 9	+0.2110941	+0.2140081	−178
22	0.8455445	0.8409961	43	0.4999290	0.5065731	7	0.2169066	0.2197895	184
23	0.8363862	0.8317152	48	0.5131804	0.5197505	4	0.2226565	0.2255073	190
24	0.8269833	0.8221911	53	0.5262828	0.5327768	+ 2	0.2283418	0.2311596	195
25	0.8173387	0.8124267	58	0.5392320	0.5456481	− 1	0.2339607	0.2367448	201
26	+0.8074554	+0.8024252	+ 63	+0.5520244	+0.5583606	− 3	+0.2395117	+0.2422611	−206
27	0.7973366	0.7921900	69	0.5646561	0.5709105	5	0.2449930	0.2477069	211
28	0.7869857	0.7817244	74	0.5771232	0.5832939	8	0.2504029	0.2530805	216
29	0.7764062	0.7710319	80	0.5894220	0.5955072	10	0.2557397	0.2583802	221
30	0.7656018	0.7601163	86	0.6015490	0.6075470	12	0.2610019	0.2636045	226
May 1	+0.7545760	+0.7489812	+ 92	+0.6135008	+0.6194099	−14	+0.2661880	+0.2687521	−231
2	0.7433324	0.7376302	99	0.6252741	0.6310928	16	0.2712966	0.2738214	236
3	0.7318749	0.7260673	106	0.6368657	0.6425924	18	0.2763261	0.2788109	241
4	0.7202074	0.7142963	113	0.6482724	0.6539056	20	0.2812752	0.2837193	246
5	0.7083338	0.7023209	120	0.6594913	0.6650296	22	0.2861427	0.2885455	250
6	+0.6962577	+0.6901448	+128	+0.6705197	+0.6759618	−23	+0.2909274	+0.2932884	−254
7	0.6839826	0.6777718	135	0.6813550	0.6866994	24	0.2956282	0.2979468	259
8	0.6715125	0.6652056	143	0.6919943	0.6972398	25	0.3002439	0.3025195	263
9	0.6588512	0.6524500	151	0.7024351	0.7075804	26	0.3047732	0.3070053	267
10	0.6460023	0.6395086	159	0.7126750	0.7177188	27	0.3092153	0.3114033	270
11	+0.6329693	+0.6263850	+167	+0.7227113	+0.7276524	−28	+0.3135691	+0.3157126	−274
12	0.6197559	0.6130828	175	0.7325414	0.7373783	29	0.3178335	0.3199319	277
13	0.6063658	0.5996057	183	0.7421629	0.7468949	30	0.3220074	0.3240602	280
14	0.5928025	0.5859571	192	0.7515736	0.7561991	30	0.3260898	0.3280964	283
15	0.5790695	0.5721406	201	0.7607708	0.7652884	30	0.3300796	0.3320395	286
16	+0.5651706	+0.5581601	+210	+0.7697515	+0.7741600	−30	+0.3339758	+0.3358894	−288
17	+0.5511094	+0.5440193	+219	+0.7785133	+0.7828114	−30	+0.3377771	+0.3396420	−290

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
May 17	+0.5511094	+0.5440193	+219	+0.7785133	+0.7828114	− 30	+0.3377771	+0.3396420	−290
18	0.5368898	0.5297220	229	0.7870540	0.7912406	29	0.3414826	0.3432992	292
19	0.5225159	0.5152723	238	0.7953712	0.7994452	29	0.3450913	0.3468591	294
20	0.5079915	0.5006741	248	0.8034622	0.8074221	28	0.3486022	0.3503205	296
21	0.4933206	0.4859315	258	0.8113243	0.8151687	27	0.3520139	0.3536822	299
22	+0.4785074	+0.4710488	+268	+0.8189550	+0.8226828	− 26	+0.3553252	+0.3569430	−301
23	0.4635562	0.4560304	278	0.8263520	0.8299622	25	0.3585351	0.3601019	303
24	0.4484717	0.4408809	288	0.8335131	0.8370045	23	0.3616427	0.3631580	305
25	0.4332585	0.4256051	298	0.8404361	0.8438076	21	0.3646472	0.3661103	306
26	0.4179213	0.4102077	308	0.8471189	0.8503695	19	0.3675473	0.3689578	307
27	+0.4024647	+0.3946931	+318	+0.8535593	+0.8566881	− 17	+0.3703421	+0.3716997	−308
28	0.3868932	0.3790660	329	0.8597556	0.8627618	15	0.3730309	0.3743354	309
29	0.3712117	0.3633313	340	0.8657064	0.8685894	12	0.3756133	0.3768643	310
30	0.3554252	0.3474942	350	0.8714105	0.8741696	9	0.3780885	0.3792857	310
31	0.3395387	0.3315596	360	0.8768664	0.8795008	6	0.3804558	0.3815988	310
June 1	+0.3235572	+0.3155323	+371	+0.8820726	+0.8845816	− 2	+0.3827145	+0.3838030	−310
2	0.3074853	0.2994170	381	0.8870277	0.8894107	+ 2	0.3848642	0.3858980	310
3	0.2913279	0.2832186	392	0.8917306	0.8939874	6	0.3869044	0.3878833	309
4	0.2750897	0.2669417	402	0.8961809	0.8983111	10	0.3888348	0.3897587	309
5	0.2587752	0.2505909	413	0.9003779	0.9023811	15	0.3906552	0.3915240	308
6	+0.2423890	+0.2341705	+423	+0.9043207	+0.9061965	+ 19	+0.3923653	+0.3931788	−307
7	0.2259356	0.2176851	434	0.9080085	0.9097565	24	0.3939647	0.3947227	306
8	0.2094195	0.2011392	444	0.9114404	0.9130603	29	0.3954529	0.3961554	305
9	0.1928449	0.1845370	455	0.9146160	0.9161075	35	0.3968299	0.3974768	303
10	0.1762161	0.1678828	465	0.9175347	0.9188974	41	0.3980956	0.3986866	301
11	+0.1595377	+0.1511813	+476	+0.9201957	+0.9214292	+ 47	+0.3992496	+0.3997846	−300
12	0.1428142	0.1344369	486	0.9225981	0.9237021	53	0.4002915	0.4007705	298
13	0.1260501	0.1176540	497	0.9247412	0.9257154	60	0.4012212	0.4016439	296
14	0.1092495	0.1008368	507	0.9266245	0.9274685	67	0.4020383	0.4024045	294
15	0.0924167	0.0839897	518	0.9282473	0.9289608	75	0.4027425	0.4030522	291
16	+0.0755563	+0.0671173	+528	+0.9296090	+0.9301918	+ 82	+0.4033336	+0.4035867	−288
17	0.0586731	0.0502245	538	0.9307091	0.9311608	90	0.4038114	0.4040077	285
18	0.0417719	0.0333161	548	0.9315469	0.9318671	98	0.4041755	0.4043148	282
19	0.0248574	+0.0163967	558	0.9321216	0.9323102	107	0.4044256	0.4045078	278
20	+0.0079343	−0.0005289	568	0.9324329	0.9324897	115	0.4045613	0.4045863	275
21	−0.0089925	−0.0174556	+577	+0.9324804	+0.9324053	+124	+0.4045826	+0.4045503	−271
22	0.0259177	0.0343781	586	0.9322640	0.9320569	133	0.4044894	0.4043999	268
23	0.0428362	0.0512914	595	0.9317837	0.9314447	143	0.4042817	0.4041349	264
24	0.0597431	0.0681906	604	0.9310396	0.9305687	153	0.4039595	0.4037554	260
25	0.0766333	0.0850705	613	0.9300318	0.9294291	163	0.4035227	0.4032614	256
26	−0.0935015	−0.1019258	+622	+0.9287605	+0.9280263	+173	+0.4029715	+0.4026531	−252
27	0.1103426	0.1187515	630	0.9272263	0.9263609	184	0.4023061	0.4019307	247
28	0.1271518	0.1355428	638	0.9254298	0.9244335	194	0.4015267	0.4010944	243
29	0.1439241	0.1522948	646	0.9233718	0.9222451	205	0.4006336	0.4001447	238
30	0.1606545	0.1690024	653	0.9210534	0.9197968	216	0.3996273	0.3990820	233
31	−0.1773379	−0.1856606	+660	+0.9184755	+0.9170895	+227	+0.3985083	+0.3979068	−228
32	−0.1939696	−0.2022648	+667	+0.9156391	+0.9141243	+238	+0.3972772	+0.3966198	−223

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
July 1	−0.1773379	−0.1856606	+660	+0.9184755	+0.9170895	+227	+0.3985083	+0.3979068	−228
2	0.1939696	0.2022648	667	0.9156391	0 9141243	238	0.3972772	0.3966198	223
3	0.2105452	0.2188107	674	0.9125452	0.9109021	250	0.3959344	0.3952213	217
4	0.2270602	0.2352936	681	0.9091949	0.9074241	262	0.3944802	0.3937116	211
5	0.2435099	0.2517089	687	0.9055895	0.9036917	274	0.3929152	0.3920915	205
6	−0.2598899	−0.2680524	+693	+0.9017306	+0.8997064	+286	+0.3912402	+0.3903617	−199
7	0.2761961	0.2843202	698	0.8976193	0.8954692	299	0.3894559	0.3885229	193
8	0.2924245	0.3005082	703	0.8932565	0.8909812	312	0.3875626	0.3865754	187
9	0.3085709	0.3166120	708	0.8886434	0.8862436	325	0.3855609	0.3845196	180
10	0.3246308	0.3326270	713	0.8837815	0.8812577	338	0.3834512	0.3823561	174
11	−0.3405998	−0.3485490	+717	+0.8786720	+0.8760248	+351	+0.3812342	+0.3800857	−167
12	0.3564737	0.3643739	721	0.8733162	0.8705463	364	0.3789105	0.3777089	160
13	0.3722485	0.3800975	725	0.8677153	0.8648232	378	0.3764807	0.3752261	153
14	0.3879200	0.3957157	728	0.8618703	0.8588567	391	0.3739451	0.3726379	146
15	0.4034840	0.4112243	731	0.8557825	0.8526481	405	0.3713044	0.3699448	138
16	−0.4189360	−0.4266186	+734	+0.8494534	+0.8461988	+419	+0.3685591	+0.3671474	−131
17	0.4342713	0.4418938	736	0.8428845	0.8395105	433	0.3657097	0.3642462	123
18	0.4494853	0.4570455	738	0.8360771	0.8325845	447	0.3627568	0.3612418	116
19	0.4645736	0.4720693	739	0.8290327	0.8254224	461	0.3597011	0.3581350	108
20	0.4795318	0.4869607	740	0.8217532	0.8180260	475	0.3565435	0.3549267	100
21	−0.4943554	−0.5017152	+740	+0.8142405	+0.8103975	+489	+0.3532846	+0.3516175	− 92
22	0.5090396	0.5163280	740	0.8064968	0.8025390	503	0.3499253	0.3482082	84
23	0.5235798	0.5307946	740	0.7985240	0.7944524	518	0.3464664	0.3446998	75
24	0.5379716	0.5451106	739	0.7903241	0.7861398	532	0.3429088	0.3410933	67
25	0.5522107	0.5592716	738	0.7818995	0.7776039	547	0.3392537	0.3373899	58
26	−0.5662926	−0.5732732	+737	+0.7732531	+0.7688475	+561	+0.3355022	+0.3335906	− 49
27	0.5802129	0.5871112	735	0.7643876	0.7598734	576	0.3316554	0.3296967	40
28	0.5939675	0.6007815	733	0.7553056	0.7506842	590	0.3277146	0.3257093	31
29	0.6075526	0.6142803	730	0.7460097	0.7412825	605	0.3236809	0.3216296	22
30	0.6209643	0.6276037	727	0.7365028	0.7316713	619	0.3195556	0.3174589	13
31	−0.6341986	−0.6407479	+724	+0.7267881	+0.7218538	+634	+0.3153399	+0.3131986	− 4
Aug. 1	0.6472518	0.6537094	720	0.7168686	0.7118329	648	0.3110353	0.3088500	+ 5
2	0.6601206	0.6664849	716	0.7067470	0.7016114	663	0.3066432	0.3044146	14
3	0.6728019	0.6790712	711	0.6964263	0.6911923	677	0.3021648	0.2998936	23
4	0.6852923	0.6914648	706	0.6859096	0.6805787	692	0.2976014	0.2952883	33
5	−0.6975882	−0.7036622	+700	+0.6752000	+0.6697737	+706	+0.2929544	+0.2905999	+ 42
6	0.7096863	0.7156603	694	0.6643004	0.6587801	720	0.2882250	0.2858297	51
7	0.7215836	0.7274560	688	0.6532134	0.6476006	734	0.2834145	0.2809791	60
8	0.7332769	0.7390461	681	0.6419419	0.6362380	748	0.2785242	0.2760494	70
9	0.7447630	0.7504274	674	0.6304890	0.6246954	762	0.2735553	0.2710417	79
10	−0.7560386	−0.7615966	+666	+0.6188575	+0.6129757	+775	+0.2685091	+0.2659573	+ 89
11	0.7671006	0.7725507	658	0.6070503	0.6010817	789	0.2633867	0.2607973	99
12	0.7779461	0.7832867	650	0.5950702	0.5890163	802	0.2581894	0.2555630	109
13	0.7885718	0.7938012	641	0.5829201	0.5767824	815	0.2529184	0.2502557	118
14	0.7989743	0.8040908	632	0.5706031	0.5643832	828	0.2475750	0.2448768	128
15	−0.8091503	−0.8141523	+622	+0.5581229	+0.5518224	+841	+0.2421609	+0.2394277	+138
16	−0.8190965	−0.8239823	+612	+0.5454827	+0.5391033	+854	+0.2366773	+0.2339096	+148

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Aug. 16	−0.8190965	−0.8239823	+612	+0.5454827	+0.5391033	+854	+0.2366773	+0.2339098	+148
17	0.8288095	0.8335774	601	0.5326854	0.5262288	866	0.2311254	0.2283244	158
18	0.8382859	0.8429345	590	0.5197342	0.5132022	878	0.2255067	0.2226729	168
19	0.8475228	0.8520506	579	0.5066329	0.5000274	890	0.2198227	0.2169569	178
20	0.8565173	0.8609226	567	0.4933856	0.4867083	902	0.2140752	0.2111781	189
21	−0.8652661	−0.8695474	+555	+0.4799961	+0.4732489	+914	+0.2082658	+0.2053384	+199
22	0.8737660	0.8779218	543	0.4664679	0.4596530	925	0.2023962	0.1994393	209
23	0.8820141	0.8860429	530	0.4528051	0.4459246	937	0.1964680	0.1934825	219
24	0.8900077	0.8939083	517	0.4390120	0.4320680	948	0.1904630	0.1874699	229
25	0.8977444	0.9015157	504	0.4250930	0.4180875	959	0.1844433	0.1814035	239
26	−0.9052219	−0.9088628	+490	+0.4110522	+0.4039874	+969	+0.1783506	+0.1752851	+249
27	0.9124380	0.9159473	476	0.3968938	0.3897718	980	0.1722069	0.1691166	259
28	0.9193905	0.9227672	461	0.3826220	0.3754449	990	0.1660140	0.1628998	269
29	0.9260772	0.9293204	446	0.3682411	0.3610110	1000	0.1597738	0.1566366	279
30	0.9324964	0.9356053	431	0.3537553	0.3464744	1010	0.1534881	0.1503288	289
31	−0.9386468	−0.9416206	+415	+0.3391688	+0.3318392	+1019	+0.1471587	+0.1439783	+299
Sept. 1	0.9445267	0.9473646	399	0.3244859	0.3171098	1028	0.1407876	0.1375871	309
2	0.9501343	0.9528355	383	0.3097110	0.3022905	1037	0.1343768	0.1311571	319
3	0.9554680	0.9580318	366	0.2948484	0.2873855	1045	0.1279280	0.1246899	328
4	0.9605265	0.9629523	349	0.2799019	0.2723986	1053	0.1214429	0.1181873	338
5	−0.9653087	−0.9675957	+332	+0.2648756	+0.2573337	+1060	+0.1149233	+0.1116511	+347
6	0.9698130	0.9719605	314	0.2497733	0.2421949	1067	0.1083710	0.1050831	357
7	0.9740380	0.9760453	296	0.2345991	0.2269862	1074	0.1017876	0.0984849	366
8	0.9779823	0.9798488	278	0.2193570	0.2117117	1080	0.0951749	0.0918582	376
9	0.9816446	0.9833697	260	0.2040510	0.1963753	1087	0.0885346	0.0852046	385
10	−0.9850237	−0.9866067	+242	+0.1886851	+0.1809810	+1093	+0.0818682	+0.0785259	+395
11	0.9881182	0.9895583	223	0.1732634	0.1655331	1099	0.0751776	0.0718240	404
12	0.9909267	0.9922232	204	0.1577902	0.1500359	1104	0.0684648	0.0651007	413
13	0.9934477	0.9946000	185	0.1422701	0.1344940	1109	0.0617315	0.0583579	422
14	0.9956798	0.9966872	166	0.1267076	0.1189117	1114	0.0549797	0.0515974	431
15	−0.9976218	−0.9984838	+146	+0.1111067	+0.1032932	+1118	+0.0482111	+0.0448211	+440
16	0.9992728	0.9999888	126	0.0954716	0.0876428	1122	0.0414275	0.0380308	449
17	1.0006316	1.0012011	106	0.0798071	0.0719655	1126	0.0346310	0.0312287	457
18	1.0016972	1.0021198	86	0.0641184	0.0562664	1130	0.0278239	0.0244170	465
19	1.0024688	1.0027440	65	0.0484103	0.0405503	1133	0.0210081	0.0175976	473
20	−1.0029456	−1.0030731	+ 44	+0.0326873	+0.0248217	+1136	+0.0141857	+0.0107727	+481
21	1.0031270	1.0031068	23	0.0169541	+0.0090854	1138	0.0073588	+0.0039444	489
22	1.0030128	1.0028448	+ 2	+0.0012158	−0.0066535	1140	+0.0005296	−0.0028851	497
23	1.0026028	1.0022869	− 20	−0.0145223	0.0223897	1142	−0.0062996	0.0097135	504
24	1.0018969	1.0014332	41	0.0302553	0.0381184	1144	0.0131266	0.0165386	512
25	−1.0008954	−1.0002840	− 63	−0.0459785	−0.0538349	+1145	−0.0199493	−0.0233584	+519
26	0.9995987	0.9988398	85	0.0616872	0.0695345	1146	0.0267657	0.0301708	527
27	0.9980073	0.9971012	107	0.0773765	0.0852123	1146	0.0335736	0.0369736	534
28	0.9961216	0.9950686	129	0.0930414	0.1008633	1146	0.0403709	0.0437647	541
29	0.9939423	0.9927427	151	0.1086772	0.1164830	1146	0.0471554	0.0505422	548
30	−0.9914701	−0.9901244	−173	−0.1242797	−0.1320671	+1145	−0.0539253	−0.0573041	+555
31	−0.9887058	−0.9872144	−196	−0.1398444	−0.1476112	+1144	−0.0606786	−0.0640484	+561

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.		X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
		Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Oct.	1	−0.9887058	−0.9872144	−196	−0.1398444	−0.1476112	+1144	−0.0606786	−0.0640484	+561
	2	0.9856504	0.9840138	219	0.1553668	0.1631107	1143	0.0674133	0.0707731	568
	3	0.9823049	0.9805236	242	0.1708423	0.1785611	1141	0.0741276	0.0774764	574
	4	0.9786701	0.9767445	265	0.1862665	0.1939581	1139	0.0808195	0.0841564	579
	5	0.9747468	0.9726773	288	0.2016352	0.2092976	1136	0.0874872	0.0908113	584
	6	−0.9705360	−0.9683231	−311	−0.2169444	−0.2245754	+1133	−0.0941289	−0.0974395	+590
	7	0.9660387	0.9636829	334	0.2321899	0.2397873	1130	0.1007430	0.1040391	595
	8	0.9612559	0.9587576	357	0.2473671	0.2549287	1127	0.1073275	0.1106081	600
	9	0.9561883	0.9535480	381	0.2624715	0.2699951	1123	0.1138804	0.1171445	605
	10	0.9508369	0.9480551	404	0.2774988	0.2849823	1119	0.1203999	0.1236466	610
	11	−0.9452028	−0.9422801	−428	−0.2924460	−0.2998863	+1114	−0.1268843	−0.1301127	+614
	12	0.9392872	0.9362242	451	0.3073056	0.3147025	1109	0.1333317	0.1365408	618
	13	0.9330912	0.9298885	475	0.3220760	0.3294260	1104	0.1397400	0.1429239	622
	14	0.9266162	0.9232744	498	0.3367515	0.3440522	1099	0.1461073	0.1492750	626
	15	0.9198634	0.9163833	522	0.3513275	0.3585767	1093	0.1524318	0.1555772	630
	16	−0.9128342	−0.9092165	−546	−0.3657994	−0.3729948	+1087	−0.1587112	−0.1618333	+634
	17	0.9055302	0.9017757	570	0.3801624	0.3873017	1081	0.1649434	0.1680412	637
	18	0.8979532	0.8940628	594	0.3944120	0.4014929	1074	0.1711264	0.1741989	640
	19	0.8901051	0.8860800	618	0.4085438	0.4155639	1067	0.1772584	0.1803046	643
	20	0.8819881	0.8778295	642	0.4225527	0.4295097	1059	0.1833373	0.1863562	646
	21	−0.8736047	−0.8693139	−666	−0.4364340	−0.4433254	+1051	−0.1893610	−0.1923514	+648
	22	0.8649575	0.8605357	690	0.4501830	0.4570066	1043	0.1953272	0.1982881	650
	23	0.8560489	0.8514974	714	0.4637954	0.4705490	1034	0.2012339	0.2041645	652
	24	0.8468816	0.8422019	738	0.4772668	0.4839483	1025	0.2070794	0.2099787	654
	25	0.8374587	0.8326522	762	0.4905930	0.4972004	1016	0.2128619	0.2157290	655
	26	−0.8277830	−0.8228514	−786	−0.5037700	−0.5103012	+1006	−0.2185797	−0.2214136	+656
	27	0.8178577	0.8128025	810	0.5167938	0.5232469	996	0.2242307	0.2270305	657
	28	0.8076860	0.8025085	834	0.5296599	0.5360323	986	0.2298130	0.2325779	658
	29	0.7972711	0.7919735	858	0.5423640	0.5486548	975	0.2353250	0.2380542	658
	30	0.7866162	0.7811998	882	0.5549036	0.5611105	964	0.2407653	0.2434581	659
	31	−0.7757246	−0.7701910	−906	−0.5672747	−0.5733959	+953	−0.2461325	−0.2487881	+658
Nov.	1	0.7645994	0.7589503	930	0.5794738	0.5855074	941	0.2514250	0.2540425	657
	2	0.7532440	0.7474811	953	0.5914969	0.5974413	929	0.2566409	0.2592197	657
	3	0.7416618	0.7357866	977	0.6033405	0.6091941	917	0.2617788	0.2643182	656
	4	0.7298558	0.7238698	1000	0.6150014	0.6207624	904	0.2668375	0.2693368	654
	5	−0.7178291	−0.7117339	−1024	−0.6264764	−0.6321431	+891	−0.2718156	−0.2742741	+653
	6	0.7055847	0.6993819	1047	0.6377620	0.6433327	877	0.2767117	0.2791285	651
	7	0.6931259	0.6868172	1071	0.6488547	0.6543276	863	0.2815242	0.2838986	650
	8	0.6804562	0.6740434	1094	0.6597510	0.6651245	848	0.2862515	0.2885828	648
	9	0.6675792	0.6610640	1117	0.6704477	0.6757201	833	0.2908921	0.2931796	646
	10	−0.6544982	−0.6478823	−1140	−0.6809415	−0.6861110	+818	−0.2954448	−0.2976878	+643
	11	0.6412166	0.6345017	1163	0.6912285	0.6962934	802	0.2999081	0.3021058	640
	12	0.6277380	0.6209260	1186	0.7013052	0.7062638	786	0.3042804	0.3064320	637
	13	0.6140661	0.6071589	1209	0.7111684	0.7160168	770	0.3085601	0.3106648	634
	14	0.6002047	0.5932042	1231	0.7208145	0.7255551	753	0.3127457	0.3148028	630
	15	−0.5861578	−0.5790661	−1254	−0.7302401	−0.7348692	+736	−0.3168358	−0.3188446	+626
	16	−0.5719298	−0.5647491	−1276	−0.7394419	−0.7439579	+718	−0.3208290	−0.3227887	+621

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Nov. 16	−0.5719298	−0.5647491	−1276	−0.7394419	−0.7439579	+718	−0.3208290	−0.3227887	+621
17	0.5575250	0.5502575	1298	0.7484166	0.7528179	700	0.3247236	0.3266335	616
18	0.5429477	0.5355956	1320	0.7571610	0.7614459	682	0.3285181	0.3303776	611
19	0.5282023	0.5207681	1342	0.7656719	0.7698389	663	0.3322115	0.3340199	606
20	0.5132937	0.5057798	1364	0.7739465	0.7779943	644	0.3358024	0.3375590	600
21	−0.4982269	−0.4906358	−1385	−0.7819819	−0.7859090	+625	−0.3392894	−0.3409935	+594
22	0.4830069	0.4753411	1406	0.7897753	0.7935804	605	0.3426711	0.3443222	588
23	0.4676388	0.4599007	1427	0.7973240	0.8010059	585	0.3459464	0.3475440	582
24	0.4521274	0.4443195	1447	0.8046258	0.8081834	564	0.3491145	0.3506582	576
25	0.4364775	0.4286022	1468	0.8116786	0.8151111	543	0.3521746	0.3536639	569
26	−0.4206940	−0.4127538	−1488	−0.8184807	−0.8217871	+521	−0.3551257	−0.3565601	+562
27	0.4047820	0.3967795	1508	0.8250300	0.8282092	499	0.3579669	0.3593460	555
28	0.3887468	0.3806846	1527	0.8313244	0.8343754	477	0.3606973	0.3620207	548
29	0.3725935	0.3644740	1546	0.8373620	0 8402839	454	0.3633162	0.3645836	540
30	0.3563268	0.3481525	1565	0.8431410	0.8459331	431	0.3658230	0.3670341	532
Dec. 1	−0.3399516	−0.3317248	−1583	−0.8486600	−0.8513216	+407	−0.3682169	−0.3693714	+524
2	0.3234725	0.3151956	1601	0.8539176	0.8564479	383	0.3704974	0.3715949	516
3	0.3068945	0.2985699	1619	0.8589124	0.8613107	359	0.3726638	0.3737040	507
4	0.2902225	0.2818526	1636	0.8636428	0.8659084	335	0.3747156	0.3756983	498
5	0.2734611	0.2650483	1653	0.8681073	0.8702394	310	0.3766522	0.3775771	489
6	−0.2566148	−0.2481615	−1670	−0.8723044	−0.8743022	+284	−0.3784730	−0.3793397	+480
7	0.2396887	0.2311974	1686	0.8762326	0.8780954	259	0.3801772	0.3809854	470
8	0.2226879	0.2141610	1702	0.8798905	0.8816177	233	0.3817643	0.3825137	459
9	0.2056172	0.1970570	1717	0.8832769	0.8848679	206	0.3832337	0.3839241	449
10	0.1884812	0.1798902	1732	0.8863904	0.8878445	179	0.3845849	0.3852159	438
11	−0.1712849	−0.1626660	−1746	−0.8892297	−0.8905461	+152	−0.3858172	−0.3863885	+427
12	0.1540340	0.1453899	1760	0.8917933	0.8929713	124	0.3869300	0.3874414	416
13	0.1367340	0.1280673	1774	0.8940798	0.8951189	96	0.3879227	0.3883739	405
14	0.1193902	0.1107034	1787	0.8960883	0.8969881	68	0.3887949	0.3891856	393
15	0.1020077	0.0933036	1800	0.8978180	0.8985779	40	0.3895461	0.3898761	381
16	−0.0845918	−0.0758733	−1812	−0.8992678	−0.8998875	+ 11	−0.3901758	−0.3904450	+369
17	0.0671485	0.0584185	1823	0.9004370	0.9009162	− 18	0.3906837	0.3908919	357
18	0.0496839	0.0409453	1834	0.9013250	0.9016634	48	0.3910695	0.3912166	345
19	0.0322037	0.0234593	1844	0.9019313	0.9021289	78	0.3913331	0.3914190	332
20	−0.0147184	−0.0059663	1854	0.9022559	0.9023125	108	0.3914743	0.3914990	319
21	+0.0027810	+0.0115279	−1863	−0.9022986	−0.9022143	−138	−0.3914930	−0.3914564	+306
22	0.0202736	0.0290175	1872	0.9020595	0.9018343	169	0.3913892	0.3912914	293
23	0.0377588	0.0464969	1880	0.9015386	0.9011727	200	0.3911630	0.3910041	280
24	0.0552310	0.0639604	1888	0.9007364	0.9002299	231	0.3908146	0.3905947	266
25	0.0726844	0.0814023	1895	0.8996533	0.8990066	262	0.3903443	0.3900635	253
26	+0.0901134	+0.0988171	−1902	−0.8982900	−0.8975035	−294	−0.3897523	−0.3894108	+239
27	0.1075127	0.1161996	1907	0.8966473	0.8957215	326	0.3890390	0.3886370	225
28	0.1248772	0.1335447	1912	0.8947262	0.8936615	358	0.3882048	0.3877425	211
29	0.1422016	0.1508470	1916	0.8925275	0.8913242	390	0.3872502	0.3867278	197
30	0.1594803	0.1681010	1920	0.8900519	0.8887105	423	0.3861755	0.3855932	182
31	+0.1767082	+0.1853016	−1923	−0.8873003	−0.8858213	−456	−0.3849811	−0.3843392	+168
32	+0.1938803	+0.2024440	−1926	−0.8842738	−0.8826578	−489	−0.3836675	−0.3829662	+153

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		Day of Month.	FEBRUARY.		Day of Month.	MARCH.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	297° 49′ 31″.9	—4° 33′ 5″.3	1.0	350° 11′ 28″.8	—4° 26′ 38″.7	1.0	14° 14′ 38″.7	—2° 54′ 37″.7
1.5	304 46 47.5	4 48 13.0	1.5	357 30 13.3	4 6 40.8	1.5	21 41 3.8	2 20 59.1
2.0	311 46 55.5	4 59 7.8	2.0	4 47 16.6	3 42 44.8	2.0	29 3 46.9	1 45 12.1
2.5	318 49 23.1	5 5 34.7	2.5	12 2 0.4	3 15 18.9	2.5	36 22 7.4	1 7 59.1
3.0	325 53 36.6	5 7 23.8	3.0	19 13 54.5	2 44 55.0	3.0	43 35 35.9	—0 30 2.6
3.5	332 59 3.0	—5 4 30.7	3.5	26 22 36.7	—2 12 7.1	3.5	50 43 53.3	+0 7 57.3
4.0	340 5 11.7	4 56 56.5	4.0	33 27 52.7	1 37 30.6	4.0	57 46 49.9	0 45 23.1
4.5	347 11 35.1	4 44 47.6	4.5	40 29 35.1	1 1 41.2	4.5	64 44 24.1	1 21 40.5
5.0	354 17 49.0	4 28 15.8	5.0	47 27 42.1	—0 25 13.8	5.0	71 36 41.7	1 56 19.1
5.5	1 23 33.0	4 7 37.4	5.5	54 22 16.5	+0 11 17.4	5.5	78 23 53.5	2 28 52.8
6.0	8 28 31.1	—3 43 13.0	6.0	61 13 24.3	+0 47 20.1	6.0	85 6 13.8	+2 58 58.9
6.5	15 32 30.3	3 15 26.8	6.5	68 1 13.7	1 22 23.7	6.5	91 43 58.9	3 26 18.3
7.0	22 35 21.2	2 44 46.4	7.0	74 45 53.0	1 55 59.9	7.0	98 17 27.3	3 50 35.4
7.5	29 36 56.5	2 11 41.6	7.5	81 27 30.9	2 27 42.8	7.5	104 46 57.3	4 11 37.4
8.0	36 37 10.5	1 36 44.5	8.0	88 6 15.0	2 57 9.2	8.0	111 12 46.6	4 29 14.9
8.5	43 35 58.3	—1 0 28.2	8.5	94 42 11.4	+3 23 58.0	8.5	117 35 12.1	+4 43 20.7
9.0	50 33 14.8	—0 23 27.0	9.0	101 15 24.3	3 47 51.5	9.0	123 54 29.3	4 53 50.2
9.5	57 28 54.0	+0 13 44.6	9.5	107 45 56.1	4 8 34.6	9.5	130 10 51.8	5 0 41.3
10.0	64 22 48.9	0 50 32.7	10.0	114 13 47.3	4 25 55.1	10.0	136 24 32.0	5 3 54.1
10.5	71 14 50.5	1 26 24.0	10.5	120 38 57.0	4 39 44.2	10.5	142 35 40.4	5 3 30.8
11.0	78 4 47.6	+2 0 46.9	11.0	127 1 23.4	+4 49 55.9	11.0	148 44 26.7	+4 59 35.5
11.5	84 52 27.7	2 33 12.2	11.5	133 21 4.0	4 56 27.3	11.5	154 50 59.4	4 52 14.6
12.0	91 37 36.8	3 3 13.0	12.0	139 37 56.5	4 59 18.4	12.0	160 55 26.0	4 41 36.3
12.5	98 19 59.8	3 30 25.9	12.5	145 51 59.5	4 58 31.9	12.5	166 57 55.0	4 27 50.3
13.0	104 59 21.5	3 54 31.4	13.0	152 3 13.4	4 54 13.3	13.0	172 58 34.7	4 11 7.9
13.5	111 35 27.0	+4 15 13.7	13.5	158 11 40.4	+4 46 30.2	13.5	178 57 34.2	+3 51 41.9
14.0	118 8 2.9	4 32 21.0	14.0	164 17 25.3	4 35 31.9	14.0	184 55 4.0	3 29 46.5
14.5	124 36 58.4	4 45 45.2	14.5	170 20 36.1	4 21 29.7	14.5	190 51 16.1	3 5 36.6
15.0	131 2 5.4	4 55 22.7	15.0	176 21 23.9	4 4 36.1	15.0	196 46 24.7	2 39 27.8
15.5	137 23 19.4	5 1 12.9	15.5	182 20 3.6	3 45 4.6	15.5	202 40 46.6	2 11 36.7
16.0	143 40 40.0	+5 3 18.5	16.0	188 16 53.7	+3 23 9.3	16.0	208 34 40.3	+1 42 20.2
16.5	149 54 11.6	5 1 45.0	16.5	194 12 16.1	2 59 5.1	16.5	214 28 27.4	1 11 55.7
17.0	156 4 3.1	4 56 39.9	17.0	200 6 36.6	2 33 7.0	17.0	220 22 32.2	0 40 40.7
17.5	162 10 28.0	4 48 12.6	17.5	206 0 24.1	2 5 30.5	17.5	226 17 21.5	+0 8 53.1
18.0	168 13 44.3	4 36 33.8	18.0	211 54 10.9	1 36 31.3	18.0	232 13 24.7	—0 23 9.2
18.5	174 14 14.6	+4 21 55.2	18.5	217 48 32.0	+1 6 25.1	18.5	238 11 13.6	—0 55 7.5
19.0	180 12 25.4	4 4 29.0	19.0	223 44 4.9	0 35 28.1	19.0	244 11 22.3	1 26 43.2
19.5	186 8 46.8	3 44 28.1	19.5	229 41 29.0	+0 3 57.0	19.5	250 14 26.5	1 57 37.0
20.0	192 3 52.4	3 22 5.4	20.0	235 41 25.1	—0 27 50.9	20.0	256 21 3.0	2 27 29.0
20.5	197 58 17.9	2 57 34.2	20.5	241 44 34.9	0 59 37.4	20.5	262 31 49.3	2 55 58.6
21.0	203 52 41.8	+2 31 8.3	21.0	247 51 40.4	—1 31 3.4	21.0	268 47 22.5	—3 22 44.5
21.5	209 47 44.1	2 3 1.4	21.5	254 3 22.3	2 1 48.3	21.5	275 8 18.7	3 47 24.2
22.0	215 44 5.9	1 33 28.1	22.0	260 20 19.8	2 31 30.2	22.0	281 35 11.4	4 9 34.7
22.5	221 42 28.8	1 2 43.5	22.5	266 43 8.8	2 59 45.6	22.5	288 8 31.1	4 28 52.1
23.0	227 43 34.3	+0 31 3.6	23.0	273 12 20.9	3 26 9.5	23.0	294 48 42.4	4 44 52.4
23.5	233 48 3.0	—0 1 14.2	23.5	279 48 22.1	—3 50 15.4	23.5	301 36 3.6	—4 57 11.7
24.0	239 56 33.8	0 33 51.1	24.0	286 31 30.5	4 11 36.3	24.0	308 30 44.7	5 5 26.9
24.5	246 9 43.0	1 6 26.6	24.5	293 21 54.9	4 29 44.3	24.5	315 32 45.5	5 9 17.0
25.0	252 28 3.2	1 38 38.6	25.0	300 19 34.5	4 44 12.2	25.0	322 41 54.7	5 8 24.3
25.5	258 52 2.0	2 10 2.5	25.5	307 24 15.7	4 54 34.3	25.5	329 57 48.7	5 2 35.5
26.0	265 22 1.2	—2 40 12.3	26.0	314 35 33.1	—5 0 28.1	26.0	337 19 51.0	—4 51 43.3
26.5	271 58 15.7	3 8 40.2	26.5	321 52 48.4	5 1 35.2	26.5	344 47 12.7	4 35 47.5
27.0	278 40 52.1	3 34 57.0	27.0	329 15 11.6	4 57 43.3	27.0	352 18 53.8	4 14 56.5
27.5	285 29 47.6	3 58 33.1	27.5	336 41 42.5	4 48 47.4	27.5	359 53 45.0	3 49 27.4
28.0	292 24 49.8	4 18 59.3	28.0	344 11 12.8	4 34 50.3	28.0	7 30 30.6	3 19 46.0
28.5	299 25 36.2	4 35 47.4	28.5	351 42 29.4	4 16 3.1	28.5	15 7 51.4	2 46 26.6
29.0	306 31 34.6	—4 48 32.2	29.0	359 14 17.1	—3 52 46.0	29.0	22 44 28.6	—2 10 10.0
29.5	313 42 3.9	4 56 52.1	29.5	6 45 22.9	3 25 26.2	29.5	30 19 7.2	1 31 41.8
30.0	320 56 15.6	5 0 31.0	30.0	14 14 38.7	2 54 37.7	30.0	37 50 38.4	0 51 50.6
30.5	328 13 15.3	4 59 18.7	30.5	21 41 3.8	2 20 59.1	30.5	45 18 1.9	—0 11 25.2
31.0	335 32 5.7	4 53 12.1	31.0	29 3 46.9	1 45 12.1	31.0	52 40 28.6	+0 28 47.2
31.5	342 51 49.0	—4 42 15.1	31.5	36 22 7.4	—1 7 59.1	31.5	59 57 20.2	+1 8 2.6

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.		Day of Month.	MAY.		Day of Month.	JUNE.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	67° 8′ 10″.0	+1° 45′ 41″.8	1.0	103° 39′ 49″.0	+4° 25′ 35″.0	1.0	151° 2′ 12″.3	+5° 5′ 7″.0
1.5	74 12 41.8	2 21 10.9	1.5	110 23 42.7	4 44 7.9	1.5	157 14 2.8	4 54 58.2
2.0	81 10 49.4	2 54 1.4	2.0	117 1 9.2	4 58 34.0	2.0	163 21 35.1	4 41 33.6
2.5	88 2 35.1	3 23 50.7	2.5	123 32 26.1	5 8 53.9	2.5	169 25 23.7	4 25 7.4
3.0	94 48 8.2	3 50 21.2	3.0	129 57 55.6	5 15 11.3	3.0	175 26 4.3	4 5 54.0
3.5	101 27 43.8	+4 13 20.1	3.5	136 18 3.9	+5 17 32.1	3.5	181 24 13.2	+3 44 7.8
4.0	108 1 41.2	4 32 38.4	4.0	142 33 19.7	5 16 4.1	4.0	187 20 26.8	3 20 3.7
4.5	114 30 22.5	4 48 10.9	4.5	148 44 13.4	5 10 56.4	4.5	193 15 21.1	2 53 56.7
5.0	120 54 11.9	4 59 55.2	5.0	154 51 16.0	5 2 19.2	5.0	199 9 30.9	2 26 1.9
5.5	127 13 34.7	5 7 51.5	5.5	160 54 59.3	4 50 23.5	5.5	205 3 29.8	1 56 35.1
6.0	133 28 56.1	+5 12 1.9	6.0	166 55 54.4	+4 35 21.1	6.0	210 57 49.7	+1 25 52.6
6.5	139 40 41.1	5 12 30.4	6.5	172 54 31.8	4 17 24.1	6.5	216 53 0.3	0 54 11.3
7.0	145 49 13.9	5 9 22.5	7.0	178 51 20.8	3 56 45.5	7.0	222 49 29.1	+0 21 49.1
7.5	151 54 57.7	5 2 45.1	7.5	184 46 49.4	3 33 38.9	7.5	228 47 41.2	—0 10 55.1
8.0	157 58 14.1	4 52 46.5	8.0	190 41 24.0	3 8 18.5	8.0	234 47 58.9	0 43 41.6
8.5	163 59 23.5	+4 39 36.2	8.5	196 35 29.7	+2 40 59.2	8.5	240 50 42.2	—1 16 10.0
9.0	169 58 44.9	4 23 24.7	9.0	202 29 29.4	2 11 56.9	9.0	246 56 7.7	1 47 58.7
9.5	175 56 36.1	4 4 24.0	9.5	208 23 44.8	1 41 28.4	9.5	253 4 29.3	2 18 45.5
10.0	181 53 13.6	3 42 47.2	10.0	214 18 36.2	1 9 51.4	10.0	259 15 58.2	2 48 7.9
10.5	137 48 53.3	3 18 48.3	10.5	220 14 22.0	0 37 24.3	10.5	265 30 43.1	3 15 43.1
11.0	193 43 50.6	+2 52 42.3	11.0	226 11 19.6	+0 4 26.3	11.0	271 48 49.7	—3 41 8.6
11.5	199 38 20.3	2 24 45.3	11.5	232 9 45.3	—0 28 42.5	11.5	278 10 21.7	4 4 2.3
12.0	205 32 37.5	1 55 14.3	12.0	238 9 54.3	1 1 41.3	12.0	284 35 20.6	4 24 3.0
12.5	211 26 57.4	1 24 27.0	12.5	244 12 1.3	1 34 8.8	12.5	291 3 46.1	4 40 51.0
13.0	217 21 36.1	0 52 41.8	13.0	250 16 20.5	2 5 43.7	13.0	297 35 36.8	4 54 8.5
13.5	223 16 50.4	+0 20 17.6	13.5	256 23 5.6	—2 36 4.1	13.5	304 10 50.2	—5 3 39.7
14.0	229 12 58.3	—0 12 26.3	14.0	262 32 30.3	3 4 48.4	14.0	310 49 23.2	5 9 11.3
14.5	235 10 19.1	0 45 10.1	14.5	268 44 48.3	3 31 35.1	14.5	317 31 12.4	5 10 33.2
15.0	241 9 13.5	1 17 33.8	15.0	275 0 13.4	3 56 3.0	15.0	324 16 14.3	5 7 38.3
15.5	247 10 3.9	1 49 17.2	15.5	281 18 59.5	4 17 51.9	15.5	331 4 25.5	5 0 23.3
16.0	253 13 14.0	—2 20 0.1	16.0	287 41 20.9	—4 36 42.0	16.0	337 55 42.5	—4 48 48.4
16.5	259 19 9.2	2 49 22.1	16.5	294 7 31.7	4 52 14.7	16.5	344 50 1.5	4 32 57.7
17.0	265 28 16.0	3 17 2.6	17.0	300 37 45.8	5 4 12.9	17.0	351 47 18.6	4 12 59.7
17.5	271 41 1.9	3 42 40.8	17.5	307 12 16.6	5 12 20.7	17.5	358 47 28.8	3 49 7.2
18.0	277 57 54.9	4 5 56.1	18.0	313 51 16.2	5 16 24.2	18.0	5 50 25.7	3 21 37.3
18.5	284 19 23.0	—4 26 27.7	18.5	320 34 55.4	—5 16 11.9	18.5	12 56 1.2	—2 50 51.6
19.0	290 45 53.0	4 43 55.1	19.0	327 23 22.5	5 11 34.9	19.0	20 4 4.1	2 17 16.2
19.5	297 17 50.3	4 57 58.1	19.5	334 16 42.8	5 2 27.6	19.5	27 14 20.0	1 41 21.4
20.0	303 55 37.3	5 8 17.0	20.0	341 14 57.7	4 48 48.1	20.0	34 26 30.5	1 3 41.2
20.5	310 39 32.8	5 14 33.3	20.5	348 18 4.1	4 30 39.3	20.5	41 40 12.8	—0 24 53.1
21.0	317 29 50.5	—5 16 30.4	21.0	355 25 53.0	—4 8 8.8	21.0	48 54 59.4	+0 14 23.1
21.5	324 26 37.3	5 13 53.9	21.5	2 38 9.4	3 41 30.1	21.5	56 10 18.1	0 53 26.1
22.0	331 29 52.3	5 6 33.0	22.0	9 54 31.0	3 11 2.9	22.0	63 25 32.3	1 31 34.3
22.5	338 39 25.9	4 54 21.8	22.5	17 14 28.6	2 37 13.0	22.5	70 40 2.1	2 8 7.1
23.0	345 54 58.6	4 37 19.6	23.0	24 37 25.8	2 0 32.4	23.0	77 53 5.1	2 42 26.5
23.5	353 16 0.2	—4 15 32.2	23.5	32 2 39.1	—1 21 39.1	23.5	85 3 57.6	+3 13 58.1
24.0	0 41 50.3	3 49 13.2	24.0	39 29 18.8	0 41 15.7	24.0	92 11 56.5	3 42 12.1
24.5	8 11 38.4	3 18 44.3	24.5	46 56 30.7	—0 0 8.0	24.5	99 16 20.8	4 6 44.3
25.0	15 44 25.7	2 44 35.1	25.0	54 23 17.4	+0 40 56.5	25.0	106 16 33.3	4 27 16.6
25.5	23 19 6.1	2 7 22.8	25.5	61 48 40.0	1 21 10.1	25.5	113 12 1.5	4 43 37.0
26.0	30 54 29.0	—1 27 50.7	26.0	69 11 40.1	+1 59 47.4	26.0	120 2 19.5	+4 55 39.5
26.5	38 29 22.4	0 46 46.7	26.5	76 31 22.6	2 36 6.8	26.5	126 47 8.6	5 3 23.1
27.0	46 2 34.9	—0 5 1.6	27.0	83 46 56.9	3 9 32.0	27.0	133 26 17.4	5 6 52.0
27.5	53 32 59.0	+0 36 34.0	27.5	90 57 38.7	3 39 32.7	27.5	139 59 42.3	5 6 14.3
28.0	60 59 32.9	1 17 11.3	28.0	98 2 51.7	4 5 45.5	28.0	146 27 27.4	5 1 40.9
28.5	68 21 23.0	1 56 5.5	28.5	105 2 8.1	4 27 53.9	28.5	152 49 43.7	4 53 25.2
29.0	75 37 45.3	+2 32 37.1	29.0	111 55 9.0	+4 45 47.8	29.0	159 6 48.4	+4 41 42.1
29.5	82 48 5.7	3 6 13.0	29.5	118 41 44.9	4 59 22.9	29.5	165 19 4.9	4 26 47.5
30.0	89 52 0.6	3 36 26.8	30.0	125 21 54.6	5 8 39.9	30.0	171 27 0.8	4 8 57.8
30.5	96 49 16.4	4 2 58.6	30.5	131 55 45.1	5 13 43.7	30.5	177 31 7.7	3 48 29.7
31.0	103 39 49.0	4 25 35.0	31.0	138 23 30.6	5 14 42.3	31.0	183 32 0.6	3 25 39.5
31.5	110 23 42.7	+4 44 7.9	31.5	144 45 31.3	+5 11 46.0	31.5	189 30 16.4	+3 0 43.5

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.		Day of Month.	AUGUST.		Day of Month.	SEPTEMBER.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	183° 32′ 0″.6	+3° 25′ 39″.5	1.0	226° 59′ 28″.6	—0° 22′ 4″.1	1.0	271° 19′ 46″.9	—3° 59′ 10″.0
1.5	189 30 16.4	3 0 43.5	1.5	232 56 4.1	0 53 19.7	1.5	277 38 59.4	4 18 41.8
2.0	195 26 34.0	2 33 57.7	2.0	238 54 50.1	1 24 10.7	2.0	284 4 0.7	4 35 16.6
2.5	201 21 32.8	2 5 38.7	2.5	244 56 25.6	1 54 18.6	2.5	290 35 12.6	4 48 33.8
3.0	207 15 52.6	1 36 2.2	3.0	251 1 27.1	2 23 24.1	3.0	297 12 50.1	4 58 13.0
3.5	213 10 12.8	+1 5 24.5	3.5	257 10 28.3	—2 51 7.2	3.5	303 56 59.7	—5 3 55.3
4.0	219 5 12.0	0 34 2.1	4.0	263 23 58.8	3 17 6.8	4.0	310 47 39.3	5 5 24.1
4.5	225 1 27.4	+0 2 12.3	4.5	269 42 23.8	3 41 1.1	4.5	317 44 37.1	5 2 25.6
5.0	230 59 34.1	—0 29 47.1	5.0	276 6 2.7	4 2 27.9	5.0	324 47 31.4	4 54 50.3
5.5	237 0 4.7	1 1 37.5	5.5	282 35 8.7	4 21 4.5	5.5	331 55 50.6	4 42 34.7
6.0	243 3 28.9	—1 32 59.1	6.0	289 9 47.6	—4 36 29.0	6.0	339 8 54.5	—4 25 41.2
6.5	249 10 13.0	2 3 31.4	6.5	295 49 58.5	4 48 20.4	6.5	346 25 55.3	4 4 19.3
7.0	255 20 39.2	2 32 52.9	7.0	302 35 32.3	4 56 19.6	7.0	353 45 59.5	3 38 45.4
7.5	261 35 5.2	3 0 41.2	7.5	309 26 12.2	5 0 10.4	7.5	1 8 10.0	3 9 23.8
8.0	267 53 44.1	3 26 33.3	8.0	316 21 34.1	4 59 40.3	8.0	8 31 28.3	2 36 44.8
8.5	274 16 43.9	—3 50 6.3	8.5	323 21 7.6	—4 54 41.2	8.5	15 54 57.5	—2 1 24.1
9.0	280 44 7.5	4 10 57.4	9.0	330 24 17.1	4 45 10.5	9.0	23 17 43.8	1 24 1.9
9.5	287 15 52.4	4 28 44.6	9.5	337 30 23.2	4 31 11.4	9.5	30 38 58.3	0 45 20.7
10.0	293 51 51.4	4 43 7.5	10.0	344 38 44.5	4 12 53.0	10.0	37 57 58.8	—0 6 3.6
10.5	300 31 52.8	4 53 47.7	10.5	351 48 39.5	3 50 30.5	10.5	45 14 10.3	+0 33 6.4
11.0	307 15 40.8	—5 0 29.7	11.0	358 59 27.9	—3 24 24.6	11.0	52 27 5.2	+1 11 28.3
11.5	314 2 56.5	5 3 1.4	11.5	6 10 32.2	2 55 1.2	11.5	59 36 23.2	1 48 24.4
12.0	320 53 18.8	5 1 14.6	12.0	13 21 19.4	2 22 50.2	12.0	66 41 50.5	2 23 20.6
12.5	327 46 25.5	4 55 5.6	12.5	20 31 20.9	1 48 24.8	12.5	73 43 19.0	2 55 46.8
13.0	334 41 54.1	4 44 35.1	13.0	27 40 13.6	1 12 20.5	13.0	80 40 45.8	3 25 17.3
13.5	341 39 22.6	—4 29 49.0	13.5	34 47 39.2	—0 35 14.0	13.5	87 34 11.7	+3 51 30.9
14.0	348 38 30.8	4 10 57.4	14.0	41 53 24.4	+0 2 18.0	14.0	94 23 40.0	4 14 10.7
14.5	355 39 0.4	3 48 15.2	14.5	48 57 19.7	0 39 38.9	14.5	101 9 16.1	4 33 3.7
15.0	2 40 35.6	3 22 1.7	15.0	55 59 18.8	1 16 13.4	15.0	107 51 6.3	4 48 0.8
15.5	9 43 2.8	2 52 39.9	15.5	62 59 17.4	1 51 28.0	15.5	114 29 17.5	4 58 56.5
16.0	16 46 10.7	—2 20 36.4	16.0	69 57 12.6	+2 24 51.5	16.0	121 3 56.3	+5 5 48.5
16.5	23 49 50.3	1 46 20.8	16.5	76 53 1.8	2 55 55.2	16.5	127 35 8.9	5 8 38.2
17.0	30 53 53.2	1 10 25.1	17.0	83 46 41.7	3 24 13.5	17.0	134 3 1.0	5 7 29.1
17.5	37 58 11.8	—0 33 23.2	17.5	90 38 8.1	3 49 24.0	17.5	140 27 37.9	5 2 28.1
18.0	45 2 38.0	+0 4 9.6	18.0	97 27 15.1	4 11 8.0	18.0	146 49 4.3	4 53 44.2
18.5	52 7 2.3	+0 41 37.1	18.5	104 13 55.2	+4 29 10.2	18.5	153 7 24.6	+4 41 28.6
19.0	59 11 13.2	1 18 23.3	19.0	110 57 59.4	4 43 19.5	19.0	159 22 43.2	4 25 54.9
19.5	66 14 56.8	1 53 52.7	19.5	117 39 17.5	4 53 28.2	19.5	165 35 5.1	4 7 18.1
20.0	73 17 56.0	2 27 31.5	20.0	124 17 38.3	4 59 33.3	20.0	171 44 36.1	3 45 54.8
20.5	80 19 50.8	2 58 47.9	20.5	130 52 50.5	5 1 35.0	20.5	177 51 23.0	3 22 2.8
21.0	87 20 18.3	+3 27 13.0	21.0	137 24 43.3	+4 59 37.4	21.0	183 55 34.3	+2 56 1.0
21.5	94 18 53.0	3 52 21.7	21.5	143 53 7.3	4 53 48.2	21.5	189 57 20.4	2 28 8.5
22.0	101 15 7.7	4 13 53.4	22.0	150 17 55.1	4 44 17.9	22.0	195 56 53.6	1 58 45.1
22.5	108 8 34.9	4 31 31.9	22.5	156 39 2.0	4 31 19.3	22.5	201 54 28.7	1 28 10.7
23.0	114 58 47.5	4 45 6.2	23.0	162 56 26.3	4 15 7.7	23.0	207 50 23.0	0 56 44.9
23.5	121 45 20.1	+4 54 30.3	23.5	169 10 10.4	+3 56 0.2	23.5	213 44 56.1	+0 24 47.2
24.0	128 27 50.0	4 59 42.9	24.0	175 20 20.7	3 34 15.0	24.0	219 38 30.8	—0 7 23.4
24.5	135 5 58.8	5 0 47.3	24.5	181 27 7.4	3 10 10.8	24.5	225 31 32.1	0 39 28.2
25.0	141 39 33.1	4 57 50.9	25.0	187 30 45.1	2 44 6.7	25.0	231 24 27.5	1 11 8.9
25.5	148 8 24.7	4 51 4.2	25.5	193 31 32.7	2 16 21.9	25.5	237 17 46.8	1 42 7.6
26.0	154 32 31.3	+4 40 40.8	26.0	199 29 52.9	+1 47 15.4	26.0	243 12 2.5	—2 12 6.8
26.5	160 51 56.7	4 26 56.0	26.5	205 26 11.8	1 17 6.1	26.5	249 7 48.6	2 40 49.2
27.0	167 6 50.8	4 10 6.7	27.0	211 20 59.2	0 46 12.2	27.0	255 5 40.6	3 7 57.5
27.5	173 17 29.0	3 50 30.5	27.5	217 14 48.0	+0 14 51.6	27.5	261 6 15.1	3 33 14.2
28.0	179 24 12.1	3 28 25.5	28.0	223 8 13.2	—0 16 38.3	28.0	267 10 9.9	3 56 21.9
28.5	185 27 25.3	3 4 9.9	28.5	229 1 52.3	0 48 0.0	28.5	273 18 2.1	4 17 3.0
29.0	191 27 38.0	+2 38 1.7	29.0	234 56 24.4	—1 18 56.4	29.0	279 30 28.5	—4 34 59.5
29.5	197 25 23.6	2 10 18.5	29.5	240 52 29.9	1 49 10.3	29.5	285 48 3.8	4 49 53.3
30.0	203 21 18.1	1 41 17.7	30.0	246 50 49.5	2 18 24.0	30.0	292 11 20.6	5 1 26.3
30.5	209 15 59.5	1 11 16.3	30.5	252 52 4.0	2 46 19.7	30.5	298 40 47.4	5 9 20.9
31.0	215 10 7.6	0 40 30.9	31.0	258 56 53.2	3 12 38.8	31.0	305 16 47.8	5 13 19.8
31.5	221 4 23.5	+0 9 18.5	31.5	265 5 55.6	—3 37 2.2	31.5	311 59 39.0	—5 13 7.7

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.		Day of Month.	NOVEMBER.		Day of Month.	DECEMBER.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	305° 16′ 47″.8	—5° 13′ 19″.8	1.0	355° 23′ 1″.2	—3° 35′ 32″.1	1.0	33° 19′ 37″.7	—0° 23′ 51″.9
1.5	311 59 39.0	5 13 7.7	1.5	2 41 0.3	3 4 3.6	1.5	40 47 49.6	+0 17 2.5
2.0	318 49 30.6	5 8 31.3	2.0	10 4 35.2	2 29 7.1	2.0	48 19 4.8	0 57 53.6
2.5	325 46 23.1	4 59 20.7	2.5	17 33 0.8	1 51 15.0	2.5	55 52 23.2	1 37 52.4
3.0	332 50 7.5	4 45 30.5	3.0	25 5 22.9	1 11 6.8	3.0	63 26 37.8	2 16 10.1
3.5	340 0 23.9	—4 27 0.3	3.5	32 40 38.8	—0 29 27.9	3.5	71 0 36.7	+2 51 59.9
4.0	347 16 41.1	4 3 56.8	4.0	40 17 38.4	+0 12 51.7	4.0	78 33 6.3	3 24 39.8
4.5	354 38 17.6	3 36 34.4	4.5	47 55 8.1	0 54 59.9	4.5	86 2 54.5	3 53 33.6
5.0	2 4 22.5	3 5 15.2	5.0	55 31 52.5	1 36 4.4	5.0	93 28 53.6	4 18 12.8
5.5	9 33 56.6	2 30 28.9	5.5	63 6 37.8	2 15 15.2	5.5	100 50 2.3	4 38 17.1
6.0	17 5 54.0	—1 52 52.6	6.0	70 38 14.9	+2 51 47.7	6.0	108 5 29.1	+4 53 34.7
6.5	24 39 5.8	1 13 9.5	6.5	78 5 41.0	3 25 2.4	6.5	115 14 33.0	5 4 1.5
7.0	32 12 22.8	—0 32 6.9	7.0	85 28 2.6	3 54 28.1	7.0	122 16 44.7	5 9 40.5
7.5	39 44 37.0	+0 9 25.5	7.5	92 44 36.3	4 19 41.1	7.5	129 11 46.9	5 10 40.6
8.0	47 14 44.6	0 50 38.0	8.0	99 54 49.5	4 40 25.9	8.0	135 59 33.6	5 7 15.1
8.5	54 41 48.4	+1 30 42.8	8.5	106 58 21.1	+4 56 34.2	8.5	142 40 9.0	+4 59 40.6
9.0	62 4 59.1	2 8 55.9	9.0	113 55 0.0	5 8 3.9	9.0	149 13 46.6	4 48 16.3
9.5	69 23 36.5	2 44 38.5	9.5	120 44 45.0	5 14 58.6	9.5	155 40 47.7	4 33 22.1
10.0	76 37 9.4	3 17 17.8	10.0	127 27 43.7	5 17 26.1	10.0	162 1 39.7	4 15 18.8
10.5	83 45 16.3	3 46 27.5	10.5	134 4 10.6	5 15 37.3	10.5	168 16 54.6	3 54 27.1
11.0	90 47 43.9	+4 11 47.3	11.0	140 34 25.9	+5 9 45.8	11.0	174 27 8.0	+3 31 7.3
11.5	97 44 26.7	4 33 3.2	11.5	146 58 54.2	5 0 6.6	11.5	180 32 57.8	3 5 39.0
12.0	104 35 26.3	4 50 6.5	12.0	153 18 3.8	4 46 55.6	12.0	186 35 3.0	2 38 21.7
12.5	111 20 49.7	5 2 53.0	12.5	159 32 24.7	4 30 29.9	12.5	192 34 3.1	2 9 34.1
13.0	118 0 48.4	5 11 22.8	13.0	165 42 28.4	4 11 6.7	13.0	198 30 37.2	1 39 34.3
13.5	124 35 37.4	+5 15 39.3	13.5	171 48 46.5	+3 49 3.5	13.5	204 25 23.1	+1 8 40.2
14.0	131 5 34.0	5 15 48.8	14.0	177 51 50.5	3 24 37.7	14.0	210 18 57.2	0 37 9.7
14.5	137 30 57.1	5 11 59.8	14.5	183 52 11.2	2 58 7.2	14.5	216 11 54.0	+0 5 20.5
15.0	143 52 6.6	5 4 22.7	15.0	189 50 17.9	2 29 49.9	15.0	222 4 45.4	—0 26 29.5
15.5	150 9 22.5	4 53 9.7	15.5	195 46 38.5	2 0 3.9	15.5	227 58 1.0	0 58 2.3
16.0	156 23 4.9	+4 38 34.2	16.0	201 41 39.1	+1 29 7.5	16.0	233 52 7.3	—1 28 59.6
16.5	162 33 33.1	4 20 50.8	16.5	207 35 44.2	0 57 19.5	16.5	239 47 27.9	1 59 2.9
17.0	168 41 5.9	4 0 15.3	17.0	213 29 16.2	+0 24 58.5	17.0	245 44 23.6	2 27 53.5
17.5	174 46 1.1	3 37 4.3	17.5	219 22 35.7	—0 7 36.2	17.5	251 43 12.0	2 55 12.8
18.0	180 48 35.6	3 11 35.2	18.0	225 16 1.8	0 40 5.3	18.0	257 44 7.7	3 20 42.1
18.5	186 49 5.8	+2 44 6.3	18.5	231 9 52.2	—1 12 9.4	18.5	263 47 22.7	—3 44 3.1
19.0	192 47 47.6	2 14 56.3	19.0	237 4 23.1	1 43 29.1	19.0	269 53 6.5	4 4 58.1
19.5	198 44 56.1	1 44 24.3	19.5	242 59 49.6	2 13 45.0	19.5	276 1 26.2	4 23 10.4
20.0	204 40 46.7	1 12 49.9	20.0	248 56 26.3	2 42 38.1	20.0	282 12 27.1	4 38 24.2
20.5	210 35 34.6	0 40 33.1	20.5	254 54 27.2	3 9 49.8	20.5	288 26 13.2	4 50 25.1
21.0	216 29 35.7	+0 7 53.6	21.0	260 54 6.1	—3 35 2.1	21.0	294 42 47.5	—4 59 0.7
21.5	222 23 6.0	—0 24 49.0	21.5	266 55 36.8	3 57 57.6	21.5	301 2 12.4	5 4 0.6
22.0	228 16 22.9	0 57 15.1	22.0	272 59 13.9	4 18 19.9	22.0	307 24 30.5	5 5 16.4
22.5	234 9 44.7	1 29 5.3	22.5	279 5 12.3	4 35 53.4	22.5	313 49 45.0	5 2 42.2
23.0	240 3 31.0	2 0 0.8	23.0	285 13 47.9	4 50 23.6	23.0	320 18 0.1	4 56 14.9
23.5	245 58 2.9	—2 29 43.4	23.5	291 25 17.4	—5 1 37.4	23.5	326 49 20.8	—4 45 53.8
24.0	251 53 42.9	2 57 55.0	24.0	297 39 58.9	5 9 22.8	24.0	333 23 53.7	4 31 41.4
24.5	257 50 55.2	3 24 18.1	24.5	303 58 11.2	5 13 29.1	24.5	340 1 46.5	4 13 43.0
25.0	263 50 5.7	3 48 36.0	25.0	310 20 14.0	5 13 47.4	25.0	346 43 8.0	3 52 7.2
25.5	269 51 41.8	4 10 32.2	25.5	316 46 27.3	5 10 10.3	25.5	353 28 7.8	3 27 5.8
26.0	275 56 12.1	—4 29 50.4	26.0	323 17 11.5	—5 2 32.5	26.0	0 16 54.9	—2 58 53.9
26.5	282 4 6.2	4 46 14.8	26.5	329 52 45.9	4 50 51.0	26.5	7 9 38.1	2 27 50.4
27.0	288 15 54.5	4 59 30.5	27.0	336 33 28.7	4 35 5.5	27.0	14 6 24.2	1 54 17.8
27.5	294 32 7.5	5 9 22.6	27.5	343 19 36.1	4 15 18.9	27.5	21 7 17.1	1 18 42.7
28.0	300 53 14.9	5 15 36.9	28.0	350 11 20.5	3 51 37.8	28.0	28 12 16.3	0 41 35.0
28.5	307 19 45.1	5 18 0.4	28.5	357 8 50.2	3 24 13.4	28.5	35 21 16.2	—0 3 28.5
29.0	313 52 4.5	—5 16 21.0	29.0	4 12 7.9	—2 53 21.3	29.0	42 34 4.7	+0 34 59.9
29.5	320 30 35.8	5 10 28.6	29.5	11 21 8.9	2 19 22.9	29.5	49 50 21.7	1 13 10.2
30.0	327 15 37.4	5 0 15.5	30.0	18 35 40.5	1 42 45.6	30.0	57 9 39.3	1 50 21.4
30.5	334 7 21.8	4 45 37.1	30.5	25 55 20.7	1 4 2.4	30.5	64 31 20.7	2 25 51.7
31.0	341 5 54.2	4 26 33.0	31.0	33 19 37.7	—0 23 51.9	31.0	71 54 41.0	2 59 0.2
31.5	348 11 11.5	—4 3 7.8	31.5	40 47 49.6	+0 17 2.5	31.5	79 18 47.9	+3 29 8.4

FOR GREENWICH MEAN NOON.				
	THE MOON'S EQUATOR.			
Date.	*i* Inclination to Earth's Equator.	Δ Ascend'g Node on Earth's Equator to Ascending Node on Ecliptic.	☊′ Ascend'g Node on Earth's Equator.	☾ Mean Longitude of the Moon.
	° ′	° ′	° ′	° ′
Jan. 1	22 36.7	236 43.2	356 53.4	302 11.3
11	22 36.0	236 10.3	356 54.6	73 57.1
21	22 35.3	235 37.4	356 55.8	205 43.0
31	22 34.7	235 4.5	356 57.0	337 28.8
Feb. 10	22 34.0	234 31.6	356 58.2	109 14.7
20	22 33.3	233 58.8	356 59.5	241 0.5
March 1	22 32.7	233 25.8	357 0.8	12 46.4
11	22 32.0	232 52.9	357 2.1	144 32.2
21	22 31.3	232 19.9	357 3.4	276 18.1
31	22 30.7	231 46.9	357 4.7	48 3.9
April 10	22 30.1	231 14.0	357 6.0	179 49.7
20	22 29.5	230 40.9	357 7.4	311 35.5
30	22 28.9	230 7.8	357 8.8	83 21.3
May 10	22 28.3	229 34.8	357 10.2	215 7.2
20	22 27.7	229 1.8	357 11.6	346 53.0
30	22 27.1	228 28.8	357 12.9	118 38.9
June 9	22 26.5	227 55.7	357 14.4	250 24.7
19	22 25.9	227 22.6	357 15.9	22 10.5
29	22 25.3	226 49.5	357 17.4	153 56.4
July 9	22 24.7	226 16.3	357 18.8	285 42.2
19	22 24.0	225 43.2	357 20.2	57 28.1
29	22 23.4	225 10.0	357 21.7	189 13.9
Aug. 8	22 22.9	224 36.8	357 23.2	320 59.7
18	22 22.3	224 3.6	357 24.7	92 45.5
28	22 21.8	223 30.4	357 26.3	224 31.4
Sept. 7	22 21.2	222 57.3	357 27.9	356 17.2
17	22 20.7	222 24.0	357 29.5	128 3.1
27	22 20.1	221 50.7	357 31.1	259 48.9
Oct. 7	22 19.6	221 17.5	357 32.7	31 34.7
17	22 19.0	220 44.3	357 34.3	163 20.6
27	22 18.4	220 11.0	357 36.0	295 6.4
Nov. 6	22 17.9	219 37.7	357 37.7	66 52.3
16	22 17.4	219 4.4	357 39.4	198 38.1
26	22 16.9	218 31.1	357 41.1	330 23.9
Dec. 6	22 16.4	217 57.7	357 42.8	102 9.7
16	22 15.9	217 24.4	357 44.4	233 55.6
26	22 15.4	216 51.1	357 46.1	5 41.4
36	22 14.9	216 17.7	357 47.8	137 27.3

Mean Solar Days.	Motion of ☾
	° ′
0.1	1 19.06
0.2	2 38.12
0.3	3 57.18
0.4	5 16.23
0.5	6 35.29
0.6	7 54.35
0.7	9 13.41
0.8	10 32.47
0.9	11 51.53
1.0	13 10.58
2.0	26 21.17
3.0	39 31.75
4.0	52 42.33
5.0	65 52.92
6.0	79 3.50
7.0	92 14.09
8.0	105 24.67
9.0	118 35.25
10.0	131 45.84
Hours.	° ′
1	0 32.94
2	1 5.88
3	1 38.82
4	2 11.76
5	2 44.70
6	3 17.65
7	3 50.59
8	4 23.53
9	4 56.47
10	5 29.41
11	6 2.35
12	6 35.29
13	7 8.23
14	7 41.17
15	8 14.11
16	8 47.06
17	9 20.00
18	9 52.94
19	10 25.88
20	10 58.82
21	11 31.76
22	12 4.70
23	12 37.64

TABLE FOR THE LIBRATION OF THE MOON.

Argument, (☊—λ) or (☊—λ—180°).

☊ − λ	Δλ	$\frac{1}{a}$	B		☊ − λ	Δλ	$\frac{1}{a}$	B	
0°	0′.0	39	0° 0′.0	180°	46°	0′.6	56	1° 3′.9	134°
1	0.0	39	0 1.6	179	47	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15.3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0.4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	555	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0.0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					
	Δλ	$\frac{1}{a}$	B	☊ − λ		Δλ	$\frac{1}{a}$	B	☊ − λ

Δλ has the sign of tan (λ — ☊)
a has the sign of cos (☊ — λ)
B has the sign of sin (☊ — λ)

FOR GREENWICH MEAN NOON.

Date.	Apparent Obliquity of the Ecliptic. (Hansen.)	Equation of Equinoxes In Longitude.	Equation of Equinoxes In R. A.	Precession of Equinoxes in Longitude.	The Sun's Aberration.	The Sun's Hor. Par.	Mean Longitude of Moon's Ascending Node.
	° ′ ″	″	s	″	″	″	° ′
Jan. 1	23 27 16.77	− 13.34	− 0.816	0.00	− 20.80	9.00	53 51.6
11	16.93	12.87	0.787	1.38	20.79	9.00	53 19.8
21	17.16	12.51	0.765	2.75	20.77	8.99	52 48.0
31	17.38	12.28	0.751	4.13	20.74	8.98	52 16.2
Feb. 10	17.62	12.19	0.745	5.50	20.71	8.96	51 44.5
20	23 27 17.84	− 12.26	− 0.750	6.88	− 20.67	8.94	51 12.7
March 1	18.03	12.45	0.761	8.26	20.63	8.92	50 40.9
11	18.17	12.73	0.778	9.63	20.57	8.90	50 9.2
21	18.24	13.06	0.799	11.01	20.51	8.87	49 37.4
31	18.24	13.37	0.818	12.38	20.45	8.85	49 5.6
April 10	23 27 18.19	− 13.61	− 0.832	13.76	− 20.39	8.82	48 33.8
20	18.10	13.76	0.841	15.14	20.34	8.80	48 2.1
30	17.98	13.78	0.843	16.51	20.29	8.78	47 30.3
May 10	17.85	13.67	0.836	17.89	20.24	8.76	46 58.5
20	17.73	13.42	0.821	19.26	20.19	8.74	46 26.7
30	23 27 17.64	− 13.05	− 0.798	20.64	− 20.16	8.72	45 55.0
June 9	17.59	12.58	0.769	22.02	20.13	8.71	45 23.2
19	17.60	12.07	0.738	23.39	20.11	8.71	44 51.4
29	17.67	11.55	0.706	24.77	20.11	8.70	44 19.7
July 9	17.79	11.07	0.677	26.14	20.10	8.70	43 47.9
19	23 27 17.95	− 10.66	− 0.652	27.52	− 20.12	8.71	43 16.1
29	18.15	10.37	0.634	28.90	20.14	8.72	42 44.3
Aug. 8	18.38	10.20	0.624	30.27	20.17	8.73	42 12.6
18	18.61	10.16	0.621	31.65	20.20	8.75	41 40.8
28	18.80	10.26	0.627	33.02	20.24	8.77	41 9.0
Sept. 7	23 27 18.95	− 10.47	− 0.640	34.40	− 20.29	8.79	40 37.3
17	19.05	10.73	0.656	35.78	20.35	8.81	40 5.5
27	19.09	11.04	0.675	37.15	20.41	8.84	39 33.7
Oct. 7	19.06	11.32	0.692	38.53	20.47	8.87	39 1.9
17	18.98	11.53	0.705	39.90	20.53	8.88	38 30.2
27	23 27 18.86	− 11.63	− 0.711	41.28	− 20.59	8.91	37 58.4
Nov. 6	18.71	11.58	0.708	42.66	20.64	8.93	37 26.6
16	18.57	11.37	0.695	44.03	20.69	8.95	36 54.8
26	18.45	11.02	0.674	45.41	20.73	8.97	36 23.1
Dec. 6	18.37	10.57	0.646	46.78	20.76	8.98	35 51.3
16	23 27 18.34	− 10.04	− 0.614	48.16	− 20.78	8.99	35 19.5
26	18.37	9.47	0.579	49.54	20.79	9.00	34 47.7
36	23 27 18.48	− 8.91	− 0.545	50.91	− 20.79	9.00	34 16.0

Mean Obliquity, 1892.0,	23° 27′ 11″.80	(Hansen).		
Mean Obliquity, 1892.0,	23° 27′ 11″.49	(Peters).		
Precession for 1892	50″.2619	log	=	1.70124
Precession in a Solar Day	0″.1376	log	=	9.13863
Precession in a Sidereal Day	0″.1372	log	=	9.13744
Sun's Mean Equatorial Horizontal Parallax .	8″.848	log	=	0.94685

Daily Motion of ☊
—3′.177

PART II

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON

FORMULÆ FOR THE REDUCTION OF THE POSITIONS OF THE FIXED STARS, USING THE NOTATION OF BESSEL, AND THE CONSTANTS OF PETERS AND STRUVE.

NOTATION.

τ, the time, reckoned in units of one year, from the beginning of the Besselian fictitious year, (1891, December 31^{d}.165 = 1892, January 0^{d}.165, Washington mean time),

α_0, δ_0, the star's mean right ascension and declination at the beginning of the fictitious year,

α, δ, the star's apparent right ascension and declination at the time τ,

u, μ', the annual proper motion in right ascension and declination,

μ $\odot$, the sun's true longitude,

☊, the longitude of the moon's ascending node,

ω, the obliquity of the ecliptic,

Γ, the longitude of the sun's perigee,

Γ', the longitude of the moon's perigee,

☾, the moon's mean longitude.

BESSELIAN STAR-NUMBERS.

$$
\begin{array}{lll}
A = \tau & - 0.34249 \sin \text{☊} & - 0.00011 \sin (3 \odot - \Gamma) \\
& + 0.00410 \sin 2 \text{☊} & - 0.00005 \sin 2 (\odot - \text{☊}) \\
& - 0.02521 \sin 2 \odot & + 0.00010 \sin 2 (\odot - \Gamma') \\
& + 0.00293 \sin (\odot + 82^\circ\ 4') & + 0.00009 \sin (2 \Gamma' - \text{☊}) \\
& + 0.00025 \sin (2 \odot - \text{☊}) & + 0.00005 \cos \Gamma' \\
& - 0.00405 \sin 2 \text{☾} & + 0.00004 \sin 2 \Gamma' \\
& + 0.00135 \sin (\text{☾} - \Gamma') &
\end{array}
$$

$$
\begin{array}{lll}
B = & - 9''.2239 \cos \text{☊} & - 0''.0027 \cos (3 \odot - \Gamma) \\
& + 0.0895 \cos 2 \text{☊} & + 0.0067 \cos (2 \odot - \text{☊}) \\
& - 0.5506 \cos 2 \odot & + 0.0024 \cos (2 \Gamma' - \text{☊}) \\
& - 0.0092 \cos (\odot + 281^\circ\ 3') & - 0.0023 \sin \Gamma' \\
& - 0.0886 \cos 2 \text{☾} & + 0.0008 \cos 2 \Gamma'
\end{array}
$$

$$C = - 20''.4451 \cos \omega \cos \odot$$
$$D = - 20.4451 \sin \odot$$
$$E = - 0.0461 \sin \text{☊} + 0''.0014 \sin 2 \text{☊} - 0''.0033 \sin 2 \odot$$

Bessel's *Star-Constants.*

$$a = 3^{s}.07257 + 1^{s}.33687 \sin \alpha_0 \tan \delta_0 = \text{precession in right ascension}$$
$$b = \tfrac{1}{15} \cos \alpha_0 \tan \delta_0$$
$$c = \tfrac{1}{15} \cos \alpha_0 \sec \delta_0$$
$$d = \tfrac{1}{15} \sin \alpha_0 \sec \delta_0$$
$$a' = 20''.0531 \cos \alpha_0 = \text{precession in declination}$$
$$b' = - \sin \alpha_0$$
$$c' = \tan \omega \cos \delta_0 - \sin \alpha_0 \sin \delta_0$$
$$d' = \cos \alpha_0 \sin \delta_0$$

Reduction to Apparent Position.

$$\alpha = \alpha_0 + \tau \mu + A a + B b + C c + D d + \tfrac{1}{15} E \qquad \text{(in time)}$$
$$\delta = \delta_0 + \tau \mu' + A a' + B b' + C c' + D d' \qquad \text{(in arc)}$$

INDEPENDENT STAR-NUMBERS.

$$f = 46''.0883\ A + E \ \text{(in arc)} = 3^{s}.07257\ A + \tfrac{1}{15}\ E \ \text{(in time)}$$
$$g \sin G = B \qquad h \sin H = C$$
$$g \cos G = 20''.0531\ A \qquad h \cos H = D \qquad i = C \tan \omega$$

Reduction to Apparent Position.

$$\alpha = \alpha_0 + f + \tau \mu + \tfrac{1}{15} g \sin (G + \alpha_0) \tan \delta_0 + \tfrac{1}{15} h \sin (H + \alpha_0) \sec \delta_0 \qquad \text{(in time)}$$
$$\delta = \delta_0 + \tau \mu' + g \cos (G + \alpha_0) + h \cos (H + \alpha_0) \sin \delta_0 + i \cos \delta_0 \qquad \text{(in arc)}$$

Notes.—(1) The independent star-numbers are more convenient, when only one or two apparent positions of a star are required, or when Bessel's star-constants are not known with sufficient accuracy. Otherwise, the Besselian star-numbers are more convenient

(2) In using the star-constants of the *British Association Catalogue*, a, b, c, d, a', b', c', d', must be changed to c, d, a, b, $-c'$, $-d'$, $-a'$, $-b'$, respectively.

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.	Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.
Jan. 0	−9.4165	−0.6895	−0.5261	+1.3035	Feb. 15	−9.0500	−0.7837	−1.1969	+1.0462
1	9.4085	0.6941	0.5665	1.3020	16	9.0477	0.7847	1.2017	1.0341
2	9.4020	0.6989	0.6034	1.3004	17	9.0436	0.7839	1.2063	1.0215
3	9.3968	0.7031	0.6373	1.2986	18	9.0365	0.7828	1.2108	1.0084
4	9.3924	0.7063	0.6685	1.2967	(10^{h}.0) 19	9.0259	0.7816	1.2152	0.9948
(7^{h}.0) 5	−9.3885	−0.7079	−0.6975	+1.2946	20	−9.0118	−0.7810	−1.2194	+0.9807
6	9.3844	0.7081	0.7246	1.2924	21	8.9946	0.7813	1.2234	0.9659
7	9.3792	0.7071	0.7500	1.2900	22	8.9758	0.7830	1.2272	0.9505
8	9.3730	0.7053	0.7738	1.2875	23	8.9566	0.7858	1.2308	0.9345
9	9.3651	0.7035	0.7963	1.2849	24	8.9393	0.7895	1.2342	0.9178
10	−9.3556	−0.7024	−0.8175	+1.2821	25	−8.9249	−0.7938	−1.2375	+0.9005
11	9.3452	0.7026	0.8377	1.2792	26	8.9143	0.7979	1.2406	0.8823
12	9.3342	0.7043	0.8568	1.2761	27	8.9074	0.8013	1.2435	0.8629
13	9.3235	0.7076	0.8749	1.2728	28	8.9027	0.8036	1.2463	0.8423
14	9.3139	0.7122	0.8921	1.2693	29	8.6987	0.8047	1.2490	0.8205
15	−9.3059	−0.7173	−0.9086	+1.2657	Mar. 1	−8.8933	−0.8045	−1.2517	+0.7975
16	9.2997	0.7224	0.9245	1.2619	2	8.8846	0.8033	1.2542	0.7731
17	9.2953	0.7267	0.9397	1.2580	3	8.8714	0.8018	1.2565	0.7472
18	9.2920	0.7298	0.9541	1.2539	4	8.8531	0.8006	1.2586	0.7196
19	9.2891	0.7315	0.9679	1.2496	5	8.8298	0.7995	1.2605	0.6900
(8^{h}.0) 20	−9.2857	−0.7317	−0.9811	+1.2451	(11^{h}.0) 6	−8.8028	−0.7997	−1.2621	+0.6582
21	9.2810	0.7309	0.9937	1.2404	7	8.7742	0.8012	1.2636	0.6236
22	9.2744	0.7295	1.0059	1.2355	8	8.7469	0.8037	1.2650	0.5859
23	9.2656	0.7285	1.0177	1.2304	9	8.7234	0.8071	1.2664	0.5445
24	9.2550	0.7283	1.0290	1.2252	10	8.7063	0.8106	1.2677	0.4987
25	−9.2429	−0.7293	−1.0399	+1.2198	11	−8.6964	−0.8139	−1.2690	+0.4473
26	9.2302	0.7319	1.0504	1.2142	12	8.6928	0.8163	1.2701	0.3888
27	9.2179	0.7358	1.0605	1.2083	13	8.6925	0.8176	1.2710	0.3212
28	9.2068	0.7407	1.0702	1.2022	14	8.6925	0.8177	1.2717	0.2412
29	9.1976	0.7457	1.0796	1.1959	15	8.6890	0.8165	1.2722	0.1424
30	−9.1904	−0.7507	−1.0887	+1.1894	16	−8.6798	−0.8147	−1.2726	+0.0140
31	9.1850	0.7547	1.0975	1.1826	17	8.6622	0.8127	1.2729	9.8321
Feb. 1	9.1806	0.7574	1.1060	1.1755	18	8.6352	0.8107	1.2731	+9.5104
2	9.1761	0.7586	1.1142	1.1682	19	8.5996	0.8096	1.2732	−8.4730
3	9.1707	0.7587	1.1221	1.1607	20	8.5562	0.8096	1.2731	9.5834
(9^{h}.0) 4	−9.1633	−0.7578	−1.1296	+1.1529	(12^{h}.0) 21	−8.5080	−0.8108	−1.2729	−9.8674
5	9.1535	0.7568	1.1368	1.1449	22	8.4598	0.8131	1.2725	0.0373
6	9.1411	0.7561	1.1438	1.1366	23	8.4158	0.8159	1.2720	0.1593
7	9.1267	0.7563	1.1506	1.1279	24	8.3798	0.8188	1.2714	0.2541
8	9.1109	0.7577	1.1572	1.1189	25	8.3546	0.6212	1.2707	0.3316
9	−9.0952	−0.7607	−1.1635	+1.1096	26	−8.3408	−0.8226	−1.2699	−0.3975
10	9.0809	0.7647	1.1696	1.1000	27	8.3300	0.8229	1.2689	0.4544
11	9.0690	0.7694	1.1755	1.0900	28	8.3153	0.8219	1.2678	0.5045
12	9.0604	0.7742	1.1812	1.0796	29	8.2889	0.8199	1.2666	0.5494
13	9.0549	0.7785	1.1867	1.0688	30	8.2428	0.8173	1.2652	0.5899
14	−9.0518	−0.7818	−1.1919	+1.0577	31	−8.1682	−0.8147	−1.2637	−0.6267
15	−9.0500	−0.7837	−1.1969	+1.0462	Apr. 1	−8.0504	−0.8125	−1.2620	−0.6606

E = — 0.″03

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.	Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.
Apr. 1	−8.0504	−0.8125	−1.2620	−0.6606	May 17	+9.0646	−0.7867	−1.0012	−1.2375
2	7.8597	0.8111	1.2602	0.6918	18	9.0755	0.7887	0.9894	1.2420
3	−7.4914	0.8110	1.2583	0.7209	19	9.0837	0.7902	0.9772	1.2464
4	+6.9031	0.8120	1.2563	0.7480	20	9.0903	0.7906	0.9646	1.2506
$(13^{h}.0)$ 5	7.6085	0.8139	1.2541	0.7733	$(16^{h}.0)$ 21	9.0967	0.7897	0.9514	1.2546
6	+7.8137	−0.8162	−1.2517	−0.7971	22	+9.1040	−0.7875	−0.9376	−1.2585
7	7.9079	0.8185	1.2492	0.8196	23	9.1133	0.7844	0.9233	1.2622
8	7.9479	0.8201	1.2466	0.8408	24	9.1250	0.7810	0.9084	1.2658
9	7.9633	0.8207	1.2439	0.8609	25	9.1390	0.7777	0.8929	1.2692
10	7.9708	0.8200	1.2410	0.8801	26	9.1547	0.7751	0.8766	1.2725
11	+7.9912	−0.8182	−1.2380	−0.8984	27	+9.1709	−0.7738	−0.8595	−1.2757
12	8.0358	0.8154	1.2348	0.9157	28	9.1866	0.7738	0.8417	1.2787
13	8.1048	0.8122	1.2314	0.9322	29	9.2007	0.7751	0.8231	1.2814
14	8.1912	0.8095	1.2279	0.9479	30	9.2125	0.7773	0.8036	1.2840
15	8.2810	0.8067	1.2242	0.9627	31	9.2217	0.7798	0.7830	1.2865
16	+8.3649	−0.8053	−1.2204	−0.9767	June 1	+9.2285	−0.7820	−0.7612	−1.2889
17	8.4371	0.8051	1.2165	0.9903	2	9.2334	0.7835	0.7380	1.2912
18	8.4955	0.8061	1.2124	1.0036	3	9.2373	0.7838	0.7135	1.2934
19	8.5406	0.8078	1.2081	1.0166	4	9.2412	0.7828	0.6874	1.2954
$(14^{h}.0)$ 20	8.5726	0.8099	1.2037	1.0294	$(17^{h}.0)$ 5	9.2460	0.7807	0.6595	1.2973
21	+8.5948	−0.8115	−1.1991	−1.0415	6	+9.2525	−0.7778	−0.6295	−1.2991
22	8.6097	0.8126	1.1943	1.0531	7	9.2609	0.7747	0.5972	1.3007
23	8.6209	0.8124	1.1893	1.0641	8	9.2712	0.7721	0.5622	1.3022
24	8.6327	0.8110	1.1841	1.0745	9	9.2827	0.7704	0.5241	1.3036
25	8.6485	0.8084	1.1787	1.0843	10	9.2948	0.7700	0.4821	1.3048
26	+8.6701	−0.8051	−1.1731	−1.0938	11	+9.3064	−0.7710	−0.4354	−1.3059
27	8.6979	0.8016	1.1674	1.1031	12	9.3171	0.7732	0.3830	1.3069
28	8.7307	0.7983	1.1615	1.1122	13	9.3260	0.7761	0.3233	1.3078
29	8.7654	0.7959	1.1554	1.1211	14	9.3332	0.7791	0.2540	1.3086
30	8.7995	0.7947	1.1491	1.1299	15	9.3388	0.7817	0.1712	1.3092
May 1	+8.8304	−0.7948	−1.1425	−1.1383	16	+9.3437	−0.7834	−0.0689	−1.3097
2	8.8564	0.7959	1.1357	1.1463	17	9.3478	0.7837	9.9344	1.3101
3	8.8764	0.7976	1.1287	1.1540	18	9.3525	0.7829	9.7386	1.3104
4	8.8908	0.7996	1.1215	1.1614	19	9.3580	0.7810	−9.3718	1.3106
$(15^{h}.0)$ 5	8.9003	0.8010	1.1141	1.1684	$(18^{h}.0)$ 20	9.3649	0.7786	+8.9430	1.3106
6	+8.9063	−0.8015	−1.1064	−1.1752	21	+9.3731	−0.7762	+9.5900	−1.3105
7	8.9109	0.8008	1.0984	1.1818	22	9.3825	0.7744	9.8458	1.3103
8	8.9163	0.7991	1.0901	1.1883	23	9.3925	0.7738	0.0054	1.3100
9	8.9245	0.7962	1.0815	1.1946	24	9.4025	0.7744	0.1220	1.3095
10	8.9364	0.7926	1.0726	1.2008	25	9.4117	0.7765	0.2137	1.3089
11	+8.9523	−0.7890	−1.0634	−1.2068	26	+9.4198	−0.7795	+0.2892	−1.3082
12	8.9716	0.7859	1.0539	1.2125	27	9.4262	0.7831	0.3534	1.3074
13	8.9926	0.7837	1.0441	1.2179	28	9.4312	0.7866	0.4092	1.3065
14	9.0138	0.7828	1.0339	1.2231	29	9.4348	0.7894	0.4586	1.3054
15	9.0336	0.7832	1.0234	1.2280	30	9.4375	0.7912	0.5028	1.3042
16	+9.0507	−0.7846	−1.0125	−1.2328	July 1	+9.4401	−0.7917	+0.5428	−1.3029
17	+9.0646	−0.7867	−1.0012	−1.2375	2	+9.4430	−0.7911	+0.5793	−1.3015

E = — 0″.03

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.	Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.
July 1	+9.4401	−0.7917	+0.5428	−1.3029	Aug. 16	+9.6278	−0.8439	+1.1849	−1.0725
2	9.4430	0.7911	0.5793	1.3015	17	9.6326	0.8446	1.1900	1.0619
3	9.4468	0.7896	0.6129	1.3000	18	9.6372	0.8465	1.1949	1.0509
4	9.4517	0.7877	0.6439	1.2983	19	9.6413	0.8494	1.1997	1.0395
($19^h.0$) 5	9.4579	0.7861	0.6728	1.2965	($22^h.0$) 20	9.6446	0.8529	1.2043	1.0277
6	+9.4651	−0.7852	+0.6998	−1.2945	21	+9.6471	−0.8567	+1.2087	−1.0155
7	9.4728	0.7855	0.7250	1.2924	22	9.6486	0.8602	1.2129	1.0029
8	9.4803	0.7872	0.7488	1.2902	23	9.6494	0.8629	1.2169	0.9899
9	9.4876	0.7901	0.7712	1.2879	24	9.6498	0.8645	1.2207	0.9762
10	9.4939	0.7938	0.7924	1.2854	25	9.6502	0.8651	1.2244	0.9619
11	+9.4989	−0.7978	+0.8125	−1.2828	26	+9.6510	−0.8647	+1.2280	−0.9470
12	9.5028	0.8015	0.8316	1.2801	27	9.6523	0.8636	1.2315	0.9314
13	9.5059	0.8044	0.8498	1.2772	28	9.6545	0.8624	1.2349	0.9152
14	9.5085	0.8063	0.8671	1.2742	29	9.6573	0.8615	1.2381	0.8981
15	9.5112	0.8068	0.8837	1.2710	30	9.6609	0.8612	1.2411	0.8801
16	+9.5144	−0.8063	+0.8996	−1.2677	31	+9.6646	−0.8620	+1.2440	−0.8611
17	9.5184	0.8051	0.9148	1.2643	Sept. 1	9.6683	0.8639	1.2467	0.8412
18	9.5235	0.8038	0.9293	1.2607	2	9.6715	0.8666	1.2492	0.8204
19	9.5294	0.8028	0.9432	1.2570	3	9.6742	0.8699	1.2516	0.7981
($20^h.0$) 20	9.5360	0.8028	0.9566	1.2531	($23^h.0$) 4	9.6760	0.8731	1.2539	0.7746
21	+9.5427	−0.8039	+0.9695	−1.2490	5	+9.6772	−0.8759	+1.2560	−0.7494
22	9.5491	0.8063	0.9819	1.2448	6	9.6779	0.8779	1.2580	0.7231
23	9.5548	0.8097	0.9938	1.2404	7	9.6785	0.8788	1.2600	0.6947
24	9.5594	0.8137	1.0053	1.2358	8	9.6792	0.8786	1.2618	0.6639
25	9.5629	0.8179	1.0164	1.2310	9	9.6804	0.8775	1.2635	0.6309
26	+9.5653	−0.8215	+1.0271	−1.2261	10	+9.6823	−0.8760	+1.2650	−0.5949
27	9.5669	0.8243	1.0374	1.2210	11	9.6849	0.8744	1.2664	0.5554
28	9.5682	0.8259	1.0474	1.2158	12	9.6881	0.8733	1.2676	0.5118
29	9.5696	0.8263	1.0570	1.2104	13	9.6917	0.8730	1.2687	0.4632
30	9.5715	0.8258	1.0663	1.2047	14	9.6954	0.8737	1.2697	0.4084
31	+9.5743	−0.8248	+1.0753	−1.1988	15	+9.6988	−0.8753	+1.2706	−0.3454
Aug. 1	9.5780	0.8238	1.0840	1.1927	16	9.7015	0.8777	1.2713	0.2713
2	9.5824	0.8233	1.0924	1.1865	17	9.7036	0.8806	1.2719	0.1819
3	9.5876	0.8237	1.1006	1.1801	18	9.7049	0.8832	1.2724	0.0692
4	9.5928	0.8254	1.1085	1.1735	($0^h.0$) 19	9.7054	0.8852	1.2728	9.9160
($21^h.0$) 5	+9.5977	−0.8262	+1.1162	−1.1666	20	+9.7056	−0.8863	+1.2730	−9.6761
6	9.6020	0.8319	1.1236	1.1594	21	9.7056	0.8864	1.2731	−9.0895
7	9.6056	0.8359	1.1307	1.1519	22	9.7058	0.8853	1.2731	+9.3491
8	9.6082	0.8398	1.1375	1.1441	23	9.7066	0.8836	1.2729	9.7586
9	9.6101	0.8431	1.1441	1.1360	24	9.7080	0.8816	1.2726	9.9655
10	+9.6115	−0.8455	+1.1505	−1.1277	25	+9.7102	−0.8796	+1.2722	+0.1049
11	9.6128	0.8467	1.1567	1.1192	26	9.7129	0.8782	1.2717	0.2103
12	9.6144	0.8467	1.1628	1.1105	27	9.7160	0.8777	1.2711	0.2949
13	9.6166	0.8461	1.1687	1.1016	28	9.7192	0.8783	1.2703	0.3658
14	9.6195	0.8450	1.1743	1.0923	29	9.7220	0.8798	1.2694	0.4265
15	+9.6234	−0.8441	+1.1797	−1.0826	30	+9.7244	−0.8818	+1.2684	+0.4796
16	+9.6278	−0.8439	+1.1849	−1.0725	Oct. 1	+9.7262	−0.8841	+1.2672	+0.5268

E = − 0.″03

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.	Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.
Oct. 1	+9.7262	−0.8841	+1.2672	+0.5268	Nov. 16	+9.8127	−0.8573	+1.0277	+1.2259
2	9.7273	0.8860	1.2658	0.5693	17	9.8143	0.8542	1.0165	1.2311
3	9.7281	0.8873	1.2643	0.6080	h 18	9.8165	0.8509	1.0048	1.2361
h 4	9.7285	0.8875	1.2627	0.6435	(4.0) 19	9.8192	0.8481	0.9926	1.2409
(1.0) 5	9.7291	0.8867	1.2610	0.6761	20	9.8223	0.8460	0.9798	1.2455
6	+9.7300	−0.8850	+1.2592	+0.7063	21	+9.8256	−0.8450	+0.9665	+1.2500
7	9.7315	0.8826	1.2572	0.7345	22	9.8289	0.8452	0.9526	1.2543
8	9.7337	0.8800	1.2550	0.7609	23	9.8319	0.8463	0.9381	1.2584
9	9.7365	0.8777	1.2527	0.7856	24	9.8344	0.8481	0.9230	1.2623
10	9.7398	0.8761	1.2503	0.8089	25	9.8365	0.8498	0.9073	1.2660
11	+9.7432	−0.8755	+1.2478	+0.8309	26	+9.8381	−0.8512	+0.8911	+1.2695
12	9.7465	0.8759	1.2451	0.8517	27	9.8395	0.8518	0.8740	1.2729
13	9.7494	0.8772	1.2423	0.8715	28	9.8407	0.8513	0.8560	1.2761
14	9.7517	0.8789	1.2393	0.8904	29	9.8422	0.8495	0.8371	1.2792
15	9.7532	0.8807	1.2361	0.9084	30	9.8439	0.8472	0.8170	1.2822
16	+9.7541	−0.8820	+1.2327	+0.9254	Dec. 1	+9.8462	−0.8443	+0.7955	+1.2851
17	9.7546	0.8826	1.2292	0.9415	2	9.8490	0.8414	0.7731	1.2878
18	9.7549	0.8821	1.2256	0.9570	h 3	9.8522	0.8391	0.7493	1.2903
h 19	9.7553	0.8805	1.2218	0.9719	(5.0) 4	9.8557	0.8377	0.7240	1.2926
(2.0) 20	9.7561	0.8781	1.2178	0.9863	5	9.8592	0.8375	0.6970	1.2948
21	+9.7575	−0.8752	+1.2136	+1.0001	6	+9.8626	−0.8384	+0.6680	+1.2968
22	9.7595	0.8722	1.2093	1.0133	7	9.8655	0.8403	0.6367	1.2987
23	9.7622	0.8697	1.2048	1.0261	8	9.8678	0.8426	0.6029	1.3004
24	9.7653	0.8681	1.2001	1.0384	9	9.8698	0.8448	0.5661	1.3020
25	9.7684	0.8675	1.1952	1.0502	10	9.8712	0.8464	0.5257	1.3035
26	+9.7715	−0.8679	+1.1901	+1.0615	11	+9.8724	−0.8471	+0.4810	+1.3049
27	9.7742	0.8691	1.1849	1.0722	12	9.8735	0.8467	0.4310	1.3062
28	9.7763	0.8707	1.1795	1.0826	13	9.8747	0.8452	0.3743	1.3073
29	9.7779	0.8721	1.1738	1.0927	14	9.8763	0.8431	0.3090	1.3082
30	9.7791	0.8730	1.1679	1.1025	15	9.8783	0.8406	0.2318	1.3089
31	+9.7800	−0.8729	+1.1618	+1.1120	16	+9.8808	−0.8384	+0.1377	+1.3094
Nov. 1	9.7809	0.8716	1.1555	1.1212	17	9.8837	0.8369	0.0176	1.3096
2	9.7821	0.8696	1.1489	1.1301	18	9.8868	0.8364	9.8504	1.3101
h 3	9.7838	0.8668	1.1421	1.1386	h 19	9.8899	0.8372	9.5747	1.3103
(3.0) 4	9.7860	0.8635	1.1351	1.1468	(6.0) 20	9.8928	0.8391	+8.5749	1.3104
5	+9.7888	−0.8605	+1.1278	+1.1547	21	+9.8954	−0.8417	−9.4652	+1.3105
6	9.7921	0.8579	1.1203	1.1623	22	9.8975	0.8446	9.7962	1.3104
7	9.7957	0.8565	1.1125	1.1697	23	9.8992	0.8472	9.9816	1.3102
8	9.7992	0.8562	1.1044	1.1768	24	9.9006	0.8491	0.1111	1.3097
9	9.8024	0.8568	1.0960	1.1837	25	9.9019	0.8499	0.2106	1.3090
10	+9.8051	−0.8582	+1.0873	+1.1904	26	+9.9032	−0.8497	−0.2914	+1.3082
11	9.8072	0.8599	1.0782	1.1969	27	9.9047	0.8486	0.3594	1.3073
12	9.8088	0.8611	1.0687	1.2031	28	9.9067	0.8469	0.4181	1.3063
13	9.8098	0.8616	1.0589	1.2091	29	9.9090	0.8450	0.4696	1.3052
14	9.8107	0.8612	1.0488	1.2149	30	9.9118	0.8436	0.5156	1.3039
15	+9.8115	−0.8597	+1.0384	+1.2205	31	+9.9148	−0.8430	−0.5570	+1.3024
16	+9.8127	−0.8573	+1.0277	+1.2259	32	+9.9180	−0.8436	−0.5947	+1.3008

E = — 0″.02

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		G		H		Log g.	Log h.	i	Log i.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
Jan.	0	0.0009	−12.04	−0.803	223 3	14 52.2	350 31	23 22.1	+0.8545	+1.3095	−1.46	−0.1631
	1	0.0037	11.84	0.789	223 54	14 55.6	349 35	23 18.3	0.8530	1.3093	1.60	0.2036
	2	0.0064	11.66	0.777	224 39	14 58.6	348 39	23 14.6	0.8521	1.3090	1.74	0.2406
	3	0.0092	11.52	0.768	225 16	15 1.1	347 43	23 10.9	0.8516	1.3087	1.88	0.2747
	4	0.0119	11.41	0.761	225 46	15 3.1	346 46	23 7.1	0.8511	1.3084	2.02	0.3059
$(7^{h}.0)$	5	0.0147	−11.30	−0.754	226 8	15 4.5	345 49	23 3.3	+0.8500	+1.3081	−2.16	−0.3350
	6	0.0174	11.20	0.747	226 25	15 5.7	344 52	22 59.5	0.8481	1.3078	2.30	0.3621
	7	0.0201	11.06	0.737	226 42	15 6.8	343 55	22 55.7	0.8451	1.3075	2.44	0.3871
	8	0.0228	10.90	0.727	226 59	15 7.9	342 58	22 51.9	0.8413	1.3071	2.58	0.4113
	9	0.0256	10.72	0.715	227 23	15 9.5	342 1	22 48.1	0.8367	1.3067	2.72	0.4336
	10	0.0283	−10.48	−0.699	227 56	15 11.7	341 4	22 44.3	+0.8318	+1.3063	−2.86	−0.4550
	11	0.0310	10.23	0.682	228 38	15 14.5	340 7	22 40.5	0.8273	1.3059	2.99	0,4751
	12	0.0337	9.98	0.665	229 29	15 17.9	339 10	22 36.7	0.8235	1.3055	3.13	0.4942
	13	0.0365	9.74	0.649	230 22	15 21.5	338 13	22 32.9	0.8210	1.3051	3.26	0.5124
	14	0.0392	9.52	0.635	231 17	15 25.1	337 15	22 29.0	0.8201	1.3046	3.39	0.5296
	15	0.0420	− 9.35	−0.623	232 8	15 28.5	336 17	22 25.1	+0.8200	+1.3041	−3.52	−0.5462
	16	0.0447	9.22	0.615	232 51	15 31.4	335 19	22 21.3	0.8209	1.3036	3.65	0.5619
	17	0.0474	9.13	0.609	233 24	15 33.6	334 21	22 17.4	0.8221	1.3031	3.78	0.5770
	18	0.0502	9.05	0.603	233 48	15 35.2	333 23	22 13.5	0.8229	1.3026	3.91	0.5914
	19	0.0529	9.00	0.600	234 5	15 36.3	332 25	22 9.7	0.8231	1.3021	4.03	0.6052
$(8^{h}.0)$	20	0.0557	− 8.93	−0.595	234 19	15 37.3	331 27	22 5.8	+0.8220	+1.3015	−4.16	−0.6185
	21	0.0584	8.83	0.589	234 34	15 38.3	330 28	22 1.9	0.8199	1.3009	4.28	0.6312
	22	0.0611	8.70	0.580	234 53	15 39.5	329 29	21 57.9	0.8168	1.3003	4.40	0.6435
	23	0.0639	8.53	0.569	235 22	15 41.5	328 30	21 54.0	0.8132	1.2997	4.52	0.6553
	24	0.0666	8.32	0.555	236 0	15 44.0	327 31	21 50.1	0.8097	1.2991	4.64	0.6666
	25	0.0694	− 8.09	−0.539	236 48	15 47.2	326 32	21 46.1	+0.8067	+1.2985	−4.76	−0.6774
	26	0.0721	7.86	0.524	237 43	15 50.8	325 33	21 42.2	0.8048	1.2979	4.87	0.6879
	27	0.0748	7.64	0.509	238 41	15 54.7	324 33	21 38.2	0.8042	1.2973	4.99	0.6981
	28	0.0776	7.45	0.497	239 36	15 58.4	323 33	21 34.2	0.8049	1.2966	5.10	0.7079
	29	0.0803	7.29	0.486	240 26	16 1.7	322 33	21 30.2	0.8065	1.2960	5.21	0.7173
	30	0.0831	− 7.17	−0.478	241 6	16 4.4	321 34	21 26.3	+0.8085	+1.2953	−5.32	−0.7263
	31	0.0858	7.09	0.473	241 37	16 6.5	320 34	21 22.3	0.8103	1.2947	5.43	0.7350
Feb.	1	0.0885	7.02	0.468	242 1	16 8.1	319 34	21 18.3	0.8114	1.2940	5.54	0.7434
	2	0.0913	6.94	0.463	242 19	16 9.3	318 33	21 14.2	0.8114	1.2934	5.64	0.7515
	3	0.0940	6.86	0.457	242 37	16 10.5	317 33	21 10.2	0.8103	1.2927	5.75	0.7593
$(9^{h}.0)$	4	0.0968	− 6.74	−0.449	242 58	16 11.9	316 33	21 6.2	+0.8080	+1.2921	−5.85	−0.7669
	5	0.0995	6.59	0.439	243 26	16 13.7	315 32	21 2.1	0.8053	1.2914	5.95	0.7742
	6	0.1022	6.41	0.427	244 3	16 16.2	314 31	20 58.1	0.8023	1.2907	6.05	0.7812
	7	0.1050	6.20	0.413	244 48	16 19.2	313 30	20 54.0	0.7997	1.2901	6.14	0.7880
	8	0.1077	5.98	0.399	245 40	16 22.7	312 29	20 49.9	0.7981	1.2894	6.23	0.7946
	9	0.1105	− 5.77	−0.385	246 35	16 26.3	311 28	20 45.9	+0.7981	+1.2888	−6.32	−0.8010
	10	0.1132	5.58	0.372	247 27	16 29.8	310 27	20 41.8	0.7993	1.2881	6.41	0.8071
	11	0.1159	5.43	0.362	248 13	16 32.9	309 25	20 37.7	0.8016	1.2874	6.50	0.8130
	12	0.1187	5.33	0.355	248 49	16 35.3	308 23	20 33.5	0.8046	1.2868	6.59	0.8187
	13	0.1214	5.26	0.351	249 15	16 37.0	307 21	20 29.4	0.8076	1.2861	6.67	0.8242
	14	0.1242	− 5.22	−0.348	249 31	16 38.1	306 18	20 25.2	+0.8102	+1.2855	−6.75	−0.8294
	15	0.1269	− 5.20	−0.347	249 41	16 38.7	305 15	20 21.0	+0.8116	+1.2849	−6.83	−0.8344

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	*f*		*G*		*H*		Log *g*.	Log *h*.	*i*	Log *i*.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
Feb.	15	0.1269	−5.20	−0.347	249 41	16 38.7	305 15	20 21.0	+0.8116	+1.2849	−6.83	−0.8344
	16	0.1296	5.17	0.345	249 49	16 39.3	304 13	20 16.9	0.8119	1.2843	6.91	0.8392
	17	0.1324	5.13	0.342	249 58	16 39.9	303 10	20 12.7	0.8110	1.2837	6.98	0.8439
	18	0.1351	5.04	0.336	250 13	16 40.9	302 7	20 8.5	0.8092	1.2831	7.05	0.8484
($10^{\mathrm{h}}.0$)	19	0.1378	4.92	0.328	250 37	16 42.5	301 4	20 4.3	0.8070	1.2825	7.12	0.8527
	20	0.1405	−4.77	−0.318	251 10	16 44.7	300 1	20 0.1	+0.8049	+1.2819	−7.19	−0.8568
	21	0.1432	4.58	0.305	251 50	16 47.3	298 58	19 55.9	0.8035	1.2813	7.26	0.8608
	22	0.1460	4.39	0.293	252 38	16 50.5	297 55	19 51.7	0.8033	1.2808	7.32	0.8646
	23	0.1487	4.20	0.280	253 27	16 53.8	296 51	19 47.4	0.8042	1.2802	7.38	0.8682
	24	0.1515	4.04	0.269	254 11	16 56.7	295 47	19 43.1	0.8063	1.2797	7.44	0.8717
	25	0.1542	−3.91	−0.261	254 50	16 59.3	294 43	19 38.9	+0.8092	+1.2792	−7.50	−0.8750
	26	0.1569	3.81	0.254	255 18	17 1.2	293 39	19 34.6	0.8123	1.2787	7.55	0.8782
	27	0.1597	3.75	0.250	255 38	17 2.5	292 35	19 30.3	0.8151	1.2783	7.60	0.8812
	28	0.1624	3.71	0.247	255 53	17 3.5	291 31	19 26.1	0.8169	1.2778	7.65	0.8840
	29	0.1652	3.68	0.245	256 1	17 4.1	290 27	19 21.8	0.8178	1.2773	7.70	0.8866
Mar.	1	0.1679	−3.63	−0.242	256 11	17 4.7	289 22	19 17.5	+0.8173	+1.2769	−7.75	−0.8891
	2	0.1706	3.56	0.237	256 24	17 5.6	288 18	19 13.2	0.8156	1.2765	7.79	0.8915
	3	0.1734	3.46	0.231	256 45	17 7.0	287 13	19 8.9	0.8135	1.2762	7.83	0.8938
	4	0.1761	3.32	0.221	257 15	17 9.0	286 9	19 4.6	0.8114	1.2758	7.87	0.8959
	5	0.1789	3.15	0.210	257 52	17 11.5	285 4	19 0.3	0.8093	1.2755	7.90	0.8978
($11^{\mathrm{h}}.0$)	6	0.1816	−2.96	−0.199	258 35	17 14.3	284 0	18 56.0	+0.8084	+1.2751	−7.93	−0.8996
	7	0.1843	2.77	0.185	259 20	17 17.3	282 55	18 51.7	0.8088	1.2748	7.96	0.9013
	8	0.1871	2.60	0.173	260 1	17 20.1	281 50	18 47.3	0.8103	1.2745	7.99	0.9028
	9	0.1898	2.47	0.165	260 37	17 22.5	280 45	18 43.0	0.8130	1.2743	8.01	0.9042
	10	0.1926	2.37	0.158	261 2	17 24.1	279 40	18 38.7	0.8159	1.2741	8.04	0.9054
	11	0.1953	−2.32	−0.155	261 18	17 25.2	278 35	18 34.3	+0.8189	+1.2739	−8.06	−0.9065
	12	0.1980	2.30	0.153	261 25	17 25.7	277 30	18 30.0	0.8212	1.2737	8.08	0.9074
	13	0.2008	2.30	0.153	261 27	17 25.8	276 25	18 25.7	0.8225	1.2735	8.10	0.9082
	14	0.2035	2.30	0.153	261 27	17 25.8	275 20	18 21.3	0.8225	1.2734	8.11	0.9089
	15	0.2063	2.28	0.152	261 30	17 26.0	274 15	18 17.0	0.8213	1.2733	8.12	0.9095
	16	0.2090	−2.24	−0.149	261 38	17 26.5	273 10	18 12.7	+0.8193	+1.2732	−8.13	−0.9100
	17	0.2117	2.15	0.143	261 56	17 27.7	272 5	18 8.3	0.8170	1.2732	8.13	0.9103
	18	0.2145	2.02	0.135	262 23	17 29.5	271 0	18 4.0	0.8146	1.2732	8.13	0.9105
	19	0.2172	1.86	0.124	262 58	17 31.9	269 55	17 59.7	0.8129	1.2732	8.13	0.9106
	20	0.2200	1.69	0.113	263 37	17 34.5	268 51	17 55.4	0.8123	1.2732	8.13	0.9105
($12^{\mathrm{h}}.0$)	21	0.2227	−1.51	−0.101	264 18	17 37.2	267 46	17 51.1	+0.8130	+1.2732	−8.13	−0.9103
	22	0.2254	1.36	0.091	264 56	17 39.7	266 41	17 46.7	0.8148	1.2733	8.12	0.9100
	23	0.2282	1.23	0.082	265 27	17 41.8	265 36	17 42.4	0.8173	1.2734	8.11	0.9096
	24	0.2309	1.14	0.076	265 50	17 43.3	264 32	17 38.1	0.8200	1.2735	8.10	0.9090
	25	0.2337	1.07	0.071	266 6	17 44.4	263 27	17 33.8	0.8222	1.2736	8.09	0.9082
	26	0.2364	−1.04	−0.069	266 13	17 44.9	262 23	17 29.5	+0.8235	+1.2737	−8.07	−0.9073
	27	0.2391	1.01	0.067	266 19	17 45.3	261 18	17 25.2	0.8238	1.2739	8.05	0.9063
	28	0.2419	0.98	0.065	266 26	17 45.7	260 14	17 20.9	0.8227	1.2741	8.03	0.9052
	29	0.2446	0.93	0.062	266 37	17 46.5	259 10	17 16.7	0.8205	1.2743	8.01	0.9040
	30	0.2474	0.84	0.056	266 57	17 47.8	258 6	17 12.4	0.8179	1.2746	7.99	0.9026
	31	0.2501	−0.71	−0.047	267 24	17 49.6	257 2	17 8.1	+0.8152	+1.2749	−7.96	−0.9011
Apr.	1	0.2528	−0.55	−0.037	268 1	17 52.1	255 58	17 3.9	+0.8128	+1.2752	−7.93	−0.8994

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		G		H		Log g.	Log h.	i	Log i.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
Apr.	1	0.2528	−0.55	−0.037	268 1	17 52.1	255 58	17 3.9	+0.8128	+1.2752	−7.93	−0.8994
	2	0.2555	0.36	0.024	268 43	17 54.9	254 54	16 59.6	0.8112	1.2755	7.90	0.8976
	3	0.2583	−0.17	−0.011	269 27	17 57.8	253 50	16 55.3	0.8111	1.2758	7.86	0.8957
	4	0.2610	+0.01	+0.001	270 9	18 0.6	252 47	16 51.1	0.8120	1.2761	7.83	0.8937
$(13^{\mathrm{h}}.0)$	5	0.2638	0.16	0.011	270 43	18 2.9	251 44	16 46.9	0.8141	1.2765	7.79	0.8915
	6	0.2665	+0.27	+0.018	271 8	18 4.5	250 41	16 42.7	+0.8163	+1.2769	−7.75	−0.8891
	7	0.2692	0.34	0.023	271 25	18 5.7	249 38	16 38.5	0.8186	1.2774	7.71	0.8866
	8	0.2720	0.38	0.025	271 34	18 6.3	248 35	16 34.3	0.8203	1.2778	7.66	0.8840
	9	0.2747	0.39	0.026	271 36	18 6.4	247 32	16 30.1	0.8209	1.2783	7.61	0.8813
	10	0.2774	0.40	0.027	271 38	18 6.5	246 29	16 25.9	0.8202	1.2787	7.56	0.8784
	11	0.2801	+0.42	+0.028	271 43	18 6.9	245 27	16 21.8	+0.8184	+1.2792	−7.51	−0.8753
	12	0.2829	0.47	0.031	271 55	18 7.7	244 25	16 17.7	0.8156	1.2797	7.45	0.8721
	13	0.2856	0.56	0.037	272 15	18 9.0	243 23	16 13.5	0.8125	1.2802	7.39	0.8688
	14	0.2884	0.69	0.046	272 46	18 11.1	242 21	16 9.4	0.8096	1.2807	7.33	0.8653
	15	0.2911	0.85	0.057	273 25	18 13.7	241 19	16 5.3	0.8075	1.2812	7.27	0.8617
	16	0.2938	+1.04	+0.069	274 10	18 16.7	240 18	16 1.2	+0.8064	+1.2817	−7.21	−0.8579
	17	0.2966	1.23	0.082	274 55	18 19.7	239 16	15 57.1	0.8067	1.2822	7.15	0.8539
	18	0.2993	1.41	0.094	275 36	18 22.4	238 15	15 53.0	0.8082	1.2828	7.08	0.8498
	19	0.3021	1.57	0.105	276 11	18 24.7	237 14	15 48.9	0.8103	1.2834	7.01	0.8455
$(14^{\mathrm{h}}.0)$	20	0.3048	1.69	0.113	276 37	18 26.5	236 13	15 44.9	0.8129	1.2840	6.94	0.8411
	21	0.3075	+1.78	+0.119	276 57	18 27.8	235 13	15 40.9	+0.8147	+1.2846	−6.87	−0.8365
	22	0.3103	1.85	0.123	277 10	18 28.7	234 12	15 36.8	0.8160	1.2852	6.79	0.8317
	23	0.3130	1.90	0.127	277 21	18 29.4	233 12	15 32.8	0.8160	1.2858	6.71	0.8267
	24	0.3158	1.95	0.130	277 35	18 30.3	232 12	15 28.8	0.8148	1.2864	6.63	0.8215
	25	0.3185	2.02	0.135	277 54	18 31.6	231 12	15 24.8	0.8124	1.2871	6.55	0.8162
	26	0.3212	+2.13	+0.142	278 22	18 33.5	230 13	15 20.9	+0.8097	+1.2877	−6.47	−0.8107
	27	0.3240	2.27	0.151	278 59	18 35.9	229 14	15 16.9	0.8070	1.2883	6.39	0.8050
	28	0.3267	2.45	0 163	279 44	18 38.9	228 15	15 13.0	0.8046	1.2889	6.30	0.7991
	29	0.3295	2.66	0.177	280 35	18 42.3	227 16	15 9.1	0.8033	1.2895	6.21	0.7929
	30	0.3322	2.88	0.192	281 28	18 45.9	226 17	15 5.1	0.8035	1.2902	6.12	0.7865
May	1	0.3349	+3.09	+0.206	282 17	18 49.1	225 18	15 1.2	+0.8049	+1.2908	−6.03	−0.7799
	2	0.3377	3.28	0.219	282 59	18 51.9	224 20	14 57.3	0.8071	1.2915	5.94	0.7731
	3	0.3404	3.44	0.229	283 31	18 54.1	223 22	14 53.5	0.8098	1.2921	5.84	0.7661
	4	0.3432	3.55	0.237	283 54	18 55.6	222 24	14 49.6	0.8125	1.2928	5.74	0.7589
$(15^{\mathrm{h}}.0)$	5	0.3459	3.63	0.242	284 9	18 56.6	221 26	14 45.7	0.8144	1.2934	5.64	0.7515
	6	0.3486	+3.68	+0.245	284 19	18 57.3	220 28	14 41.9	+0.8152	+1.2940	−5.54	−0.7438
	7	0.3514	3.72	0.248	284 29	18 57.9	219 31	14 38.1	0.8148	1.2947	5.44	0.7358
	8	0.3541	3.77	0.251	284 43	18 58.9	218 34	14 34.3	0.8136	1.2953	5.34	0.7275
	9	0.3569	3.84	0.256	285 5	19 0.3	217 37	14 30.5	0.8114	1.2959	5.24	0.7189
	10	0.3596	3.96	0.264	285 36	19 2.4	216 40	14 26.7	0.8089	1.2965	5.13	0.7100
	11	0.3623	+4.10	+0.273	286 17	19 5.1	215 43	14 22.9	+0.8068	+1.2971	−5.02	−0.7008
	12	0.3651	4.29	0.286	287 6	19 8.4	214 47	14 19.1	0.8055	1.2977	4.91	0.6913
	13	0.3678	4.50	0.300	287 58	19 11.9	213 51	14 15.4	0.8054	1.2983	4.80	0.6815
	14	0.3706	4.73	0.315	288 51	19 15.4	212 55	14 11.7	0.8067	1.2989	4.69	0.6713
	15	0.3733	4.95	0.330	289 39	19 18.6	211 59	14 7.9	0.8093	1.2994	4.58	0.6608
	16	0.3760	+5.15	+0.343	290 19	19 21.3	211 3	14 4.2	+0.8125	+1.3000	−4.47	−0.6499
	17	0.3788	+5.32	+0.355	290 49	19 23.3	210 8	14 0.5	+0.8160	+1.3006	−4.36	−0.6386

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		G		H		Log g.	Log h.	i	Log i.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	″	s	° ′	h m	° ′	h m			″	
May 17	0.3788	+ 5.32	+0.355	290 49	19 23.3	210 8	14 0.5	+0.8160	+1.3006	−4.36	−0.6386
18	0.3815	5.45	0.363	291 13	19 24.9	209 12	13 56.8	0.8192	1.3011	4.24	0.6268
19	0.3843	5.56	0.371	291 31	19 26.1	208 17	13 53.1	0.8216	1.3016	4.12	0.6146
20	0.3870	5.64	0.376	291 48	19 27.2	207 22	13 49.5	0.8228	1.3021	4.00	0.6020
(16^{h}.0) 21	0.3897	5.73	0.382	292 8	19 28.5	206 27	13 45.8	0.8229	1.3026	3.88	0.5889
22	0.3925	+ 5.82	+0.388	292 34	19 30.3	205 33	13 42.2	+0.8221	+1.3031	−3.76	−0.5752
23	0.3952	5.95	0.397	293 9	19 32.6	204 38	13 38.5	0.8209	1.3036	3.64	0.5609
24	0.3980	6.11	0.407	293 53	19 35.5	203 44	13 34.9	0.8199	1.3041	3.52	0.5460
25	0.4007	6.31	0.421	294 44	19 38.9	202 49	13 31.3	0.8195	1.3045	3.39	0.5305
26	0.4034	6.55	0.437	295 40	19 42.7	201 55	13 27.7	0.8202	1.3050	3.26	0.5143
27	0.4061	+ 6.80	+0.453	296 35	19 46.3	201 1	13 24.1	+0.8223	+1.3054	−3.14	−0.4973
28	0.4089	7.05	0.470	297 25	19 49.7	200 7	13 20.5	0.8256	1.3058	3.01	0.4795
29	0.4116	7.28	0.485	298 7	19 52.5	199 13	13 16.9	0.8296	1.3062	2.89	0.4608
30	0.4143	7.49	0.499	298 39	19 54.6	198 19	13 13.3	0.8340	1.3066	2.76	0.4411
31	0.4170	7.65	0.510	299 1	19 56.1	197 25	13 9.7	0.8381	1.3070	2.63	0.4204
June 1	0.4198	+ 7.77	+0.518	299 17	19 57.1	196 32	13 6.1	+0.8414	+1.3073	−2.50	−0.3986
2	0.4225	7.86	0.524	299 28	19 57.9	195 38	13 2.5	0.8437	1.3077	2.37	0.3755
3	0.4253	7.93	0.529	299 40	19 58.7	194 45	12 59.0	0.8448	1.3080	2.24	0.3510
4	0.4280	8.00	0.533	299 57	19 59.8	193 52	12 55.5	0.8451	1.3083	2.11	0.3248
(17^{h}.0) 5	0.4307	8.09	0.539	300 21	20 1.4	192 59	12 51.9	0.8447	1.3086	1.98	0.2969
6	0.4335	+ 8.21	+0.547	300 53	20 3.5	192 6	12 48.4	+0.8442	+1.3088	−1.85	−0.2670
7	0.4362	8.37	0.558	301 34	20 6.3	191 13	12 44.9	0.8442	1.3091	1.72	0.2347
8	0.4390	8.58	0.572	302 20	20 9.3	190 20	12 41.3	0.8453	1.3093	1.59	0.1996
9	0.4417	8.81	0.587	303 7	20 12.5	189 27	12 37.8	0.8474	1.3095	1.45	0.1614
10	0.4444	9.06	0.604	303 53	20 15.5	188 34	12 34.3	0.8508	1.3097	1.32	0.1195
11	0.4472	+ 9.30	+0.620	304 32	20 18.1	187 41	12 30.7	+0.8552	+1.3098	−1.18	−0.0728
12	0.4499	9.53	0.635	305 3	20 20.2	186 48	12 27.2	0.8601	1.3100	1.05	0.0205
13	0.4527	9.73	0.649	305 26	20 21.7	185 55	12 23.7	0.8650	1.3102	0.91	9.9607
14	0.4554	9.90	0.660	305 41	20 22.7	185 3	12 20.2	0.8694	1.3103	0.78	9.8913
15	0.4581	10.03	0.669	305 53	20 23.5	184 10	12 16.7	0.8731	1.3104	0.64	9.8085
16	0.4609	+10.14	+0.676	306 5	20 24.3	183 18	12 13.2	+0.8759	+1.3104	−0.51	−9.7061
17	0.4636	10.24	0.683	306 19	20 25.3	182 25	12 9.7	0.8775	1.3105	0.37	9.5718
18	0.4664	10.35	0.690	306 40	20 26.7	181 33	12 6.2	0.8786	1.3105	0.24	9.3760
19	0.4691	10.48	0.699	307 8	20 28.5	180 40	12 2.7	0.8794	1.3106	−0.10	−9.0090
(18^{h}.0) 20	0.4718	10.65	0.710	307 43	20 30.9	179 48	11 59.2	0.8804	1.3106	+0.03	+8.5237
21	0.4746	+10.85	+0.723	308 23	20 33.5	178 55	11 55.7	+0.8820	+1.3105	+0.17	+9.2267
22	0.4773	11.09	0.739	309 7	20 36.5	178 2	11 52.1	0.8846	1.3105	0.30	9.4833
23	0.4800	11.35	0.757	309 49	20 39.3	177 9	11 48.6	0.8884	1.3104	0.44	9.6431
24	0.4828	11.61	0.774	310 25	20 41.7	176 17	11 45.1	0.8929	1.3104	0.57	9.7595
25	0.4855	11.87	0.791	310 53	20 43.5	175 24	11 41.6	0.8980	1.3103	0.70	9.8506
26	0.4883	+12.09	+0.806	311 13	20 44.9	174 32	11 38.1	+0.9032	+1.3102	+0.84	+9.9266
27	0.4910	12.26	0.817	311 24	20 45.6	173 39	11 34.6	0.9080	1.3101	0.97	9.9908
28	0.4938	12.41	0.827	311 30	20 46.0	172 47	11 31.1	0.9121	1.3100	1.10	0.0467
29	0.4965	12.51	0.834	311 33	20 46.2	171 54	11 27.6	0.9153	1.3098	1.24	0.0961
30	0.4492	12.60	0.840	311 37	20 46.5	171 1	11 24.1	0.9175	1.3096	1.37	0.1403
July 1	0.5020	+12.67	+0.845	311 45	20 47.0	170 9	11 20.6	+0.9189	+1.3094	+1.51	+0.1802
2	0.5047	+12.74	+0.849	311 59	20 47.9	169 16	11 17.1	+0.9199	+1.3092	+1.64	+0.2167

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	*f*		*G*		*H*		Log *g*.	Log *h*.	*i*	Log *i*.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	″	s	° ′	h m	° ′	h m			″	
July 1	0.5020	+12.67	+0.845	311 45	20 47.0	170 9	11 20.6	+0.9189	+1.3094	+1.51	+0.1802
2	0.5047	12.74	0.849	311 59	20 47.9	169 16	11 17.1	0.9199	1.3092	1.64	0.2167
3	0.5075	12.86	0.857	312 20	20 49.3	168 23	11 13.5	0.9208	1.3090	1.78	0.2504
4	0.5102	13.01	0.867	312 46	20 51.1	167 30	11 10.0	0.9220	1.3087	1.91	0.2814
($19^{h}.0$) 5	0.5129	13.20	0.880	313 17	20 53.1	166 37	11 6.5	0.9240	1.3084	2.04	0.3103
6	0.5157	+13.42	+0.895	313 49	20 55.3	165 44	11 2.9	+0.9269	+1.3081	+2.17	+0.3372
7	0.5184	13.66	0.911	314 18	20 57.2	164 51	10 59.4	0.9308	1.3078	2.30	0.3625
8	0.5212	13.90	0.927	314 41	20 58.7	163 58	10 55.9	0.9354	1.3075	2.43	0.3862
9	0.5239	14.13	0.941	314 59	20 59.9	163 5	10 52.3	0.9405	1.3072	2.56	0.4087
10	0.5266	14.34	0.956	315 9	21 0.6	162 12	10 48.8	0 9455	1.3068	2.69	0.4299
11	0.5293	+14.51	+0.967	315 13	21 0.9	161 18	10 45.2	+0.9500	+1.3064	+2.82	+0.4500
12	0.5321	14.64	0.976	315 14	21 0.9	160 25	10 41.7	0.9538	1.3060	2.95	0.4691
13	0.5348	14.75	0.983	315 15	21 1.0	159 31	10 38.1	0.9567	1.3056	3.08	0.4872
14	0.5375	14.83	0.989	315 17	21 1.1	158 37	10 34.5	0.9591	1.3052	3.20	0.5046
15	0.5402	14.93	0.995	315 26	21 1.7	157 43	10 30.9	0.9607	1.3048	3.33	0.5212
16	0.5430	+15.04	+1.003	315 41	21 2.7	156 49	10 27.3	+0.9620	+1.3043	+3.45	+0.5371
17	0.5457	15.18	1.012	316 1	21 4.1	155 55	10 23.7	0.9635	1.3039	3.57	0.5523
18	0.5485	15.35	1.023	316 27	21 5.8	155 1	10 20.1	0.9655	1.3034	3.69	0.5668
19	0.5512	15.57	1.038	316 54	21 7.6	154 6	10 16.4	0.9682	1.3029	3.81	0.5807
($20^{h}.0$) 20	0.5539	15.80	1.053	317 20	21 9.3	153 12	10 12.8	0.9717	1.3024	3.93	0.5941
21	0.5567	+16.05	+1.070	317 42	21 10.8	152 17	10 9.1	+0.9759	+1.3019	+4.05	+0.6070
22	0.5594	16.30	1.087	317 58	21 11.9	151 22	10 5.5	0.9805	1.3014	4.16	0.6194
23	0.5622	16.51	1.101	318 7	21 12.5	150 27	10 1.8	0.9851	1.3009	4.28	0.6313
24	0.5649	16.68	1.112	318 9	21 12.6	149 32	9 58.1	0.9895	1.3003	4.39	0.6428
25	0.5676	16.82	1.121	318 6	21 12.4	148 36	9 54.4	0.9933	1.2998	4.51	0.6539
26	0.5704	+16.91	+1.127	318 2	21 12.1	147 41	9 50.7	+0.9962	+1.2992	+4.62	+0.6646
27	0.5731	16.97	1.132	317 57	21 11.8	146 46	9 47.0	0.9984	1.2987	4.73	0.6750
28	0.5759	17.02	1.135	317 56	21 11.7	145 50	9 43.3	0.9998	1.2982	4.84	0.6850
29	0.5786	17.08	1.139	318 0	21 12.0	144 54	9 39.6	1.0008	1.2975	4.95	0.6946
30	0.5813	17.15	1.143	318 9	21 12.6	143 58	9 35.9	1.0016	1.2969	5.06	0.7035
31	0.5841	+17.27	+1.151	318 24	21 13.6	143 2	9 32.1	+1.0027	+1.2963	+5.16	+0.7123
Aug. 1	0.5868	17.41	1.161	318 43	21 14.9	142 6	9 28.4	1.0043	1.2957	5.27	0.7210
2	0.5896	17.59	1.173	319 2	21 16.1	141 10	9 24.7	1.0066	1.2951	5.37	0.7296
3	0.5923	17.80	1.187	319 21	21 17.4	140 13	9 20.9	1.0097	1.2945	5.47	0.7381
4	0.5950	18.02	1.201	319 34	21 18.3	139 16	9 17.1	1.0135	1.2939	5.57	0.7462
($21^{h}.0$) 5	0.5978	+18.22	+1.215	319 42	21 18.8	138 19	9 13.3	+1.0175	+1.2933	+5.67	+0.7539
6	0.6005	18.41	1.227	319 45	21 19.0	137 21	9 9.4	1.0215	1.2926	5.78	0.7612
7	0.6033	18.56	1.237	319 43	21 18.9	136 24	9 5.6	1.0253	1.2920	5.87	0.7682
8	0.6060	18.66	1.244	319 38	21 18.5	135 26	9 1.7	1.0285	1.2913	5.96	0.7749
9	0.0087	18.75	1.250	319 33	21 18.2	134 28	8 57.9	1.0309	1.2907	6.05	0.7815
10	0.6115	+18.81	+1.254	319 29	21 17.9	133 30	8 54.0	+1.0328	+1.2900	+6.14	+0.7879
11	0.6142	18.87	1.258	319 29	21 17.9	132 32	8 50.1	1.0341	1.2894	6.23	0.7941
12	0.6170	18.94	1.263	319 35	21 18.3	131 33	8 46.2	1.0349	1.2888	6.32	0.8002
13	0.6197	19.03	1.269	319 46	21 19.1	130 35	8 42.3	1.0360	1.2882	6.40	0.8061
14	0.6224	19.16	1.277	320 2	21 20.1	129 36	8 38.4	1.0372	1.2875	6.48	0.8118
15	0.6252	+19.33	+1.289	320 21	21 21.4	128 37	8 34.5	+1.0391	+1.2869	+6.56	+0.8173
16	0.6279	+19.53	+1.302	320 38	21 22.5	127 38	8 30.5	+1.0418	+1.2863	+6.64	+0.8226

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	*f*		*G*		*H*		Log *g*.	Log *h*.	*i*	Log *i*.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	″	s	° ′	h m	° ′	h m			″	
Aug. 16	0.6279	+19.53	+1.302	320 38	21 22.5	127 38	8 30.5	+1.0418	+1.2863	+6.64	+0.8226
17	0.6307	19.75	1.317	320 54	21 23.6	126 39	8 26.6	1.0449	1.2857	6.72	0.8276
18	0.6334	19.96	1.331	321 5	21 24.3	125 40	8 22.7	1.0484	1.2851	6.80	0.8324
19	0.6361	20.15	1.343	321 9	21 24.6	124 40	8 18.7	1.0521	1.2845	6.87	0.8371
$(22^{h}.0)$ 20	0.6389	20.30	1.353	321 9	21 24.6	123 40	8 14.7	1.0554	1.2839	6.94	0.8417
21	0.6416	+20.42	+1.361	321 4	21 24.3	122 40	8 10.7	+1.0584	+1.2834	+7.01	+0.8461
22	0.6444	20.49	1.366	320 56	21 23.7	121 39	8 6.6	1.0607	1.2828	7.18	0.8503
23	0.6471	20.53	1.369	320 49	21 23.3	120 39	8 2.6	1.0622	1.2823	7.15	0.8544
24	0.6498	20.55	1.370	320 44	21 22.9	119 38	7 58.5	1.0631	1.2817	7.21	0.8583
25	0.6526	20.56	1.371	320 43	21 22.9	118 37	7 54.5	1.0636	1.2812	7.27	0.8621
26	0.6553	+20.61	+1.374	320 48	21 23.2	117 36	7 50.4	+1.0639	+1.2806	+7.33	+0.8657
27	0.6581	20.67	1.378	320 57	21 23.8	116 35	7 46.3	1.0643	1.2801	7.39	0.8691
28	0.6608	20.77	1.385	321 10	21 24.7	115 34	7 42.3	1.0652	1.2796	7.45	0.8723
29	0.6635	20.91	1.394	321 25	21 25.7	114 33	7 38.2	1.0665	1.2791	7.50	0.8754
30	0.6662	21.08	1.405	321 40	21 26.7	113 32	7 34.1	1.0686	1.2786	7.55	0.8784
31	0.6690	+21.27	+1.418	321 51	21 27.4	112 30	7 30.0	+1.0712	+1.2782	+7.60	+0.8813
Sept. 1	0.6717	21.45	1.430	321 58	21 27.9	111 28	7 25.9	1.0742	1.2778	7.65	0.8840
2	0.6744	21.60	1.440	321 58	21 27.9	110 26	7 21.7	1.0774	1.2774	7.70	0.8866
3	0.6771	21.74	1.450	321 57	21 27.7	109 24	7 17.6	1.0802	1.2770	7.74	0.8890
$(23^{h}.0)$ 4	0.6799	21.83	1.455	321 52	21 27.5	108 21	7 13.4	1.0825	1.2766	7.78	0.8913
5	0.6826	+21.89	+1.459	321 46	21 27.1	107 19	7 9.3	+1.0843	+1.2762	+7.82	+0.8935
6	0.6854	21.93	1.462	321 41	21 26.7	106 16	7 5.1	1.0855	1.2758	7.86	0.8956
7	0.6881	21.95	1.463	321 40	21 26.7	105 13	7 0.9	1.0862	1.2755	7.90	0.8975
8	0.6908	21.99	1.466	321 43	21 26.9	104 10	6 56.7	1.0865	1.2752	7.93	0.8993
9	0.6936	22.05	1.470	321 52	21 27.5	103 7	6 52.5	1.0869	1.2749	7.96	0.9009
10	0.6963	+22.14	+1.476	322 5	21 28.3	102 4	6 48.3	+1.0875	+1.2747	+7.99	+0.9024
11	0.6991	22.28	1.485	322 21	21 29.4	101 1	6 44.1	1.0885	1.2744	8.02	0.9038
12	0.7018	22.45	1.497	322 37	21 30.5	99 57	6 39.8	1.0901	1.2742	8.04	0.9050
13	0.7045	22.64	1.509	322 52	21 31.5	98 54	6 35.6	1.0923	1.2740	8.06	0.9061
14	0.7073	22.83	1.522	323 4	21 32.3	97 50	6 31.3	1.0949	1.2738	8.08	0.9071
15	0.7100	+23.01	+1.534	323 11	21 32.7	96 47	6 27.1	+1.0976	+1.2737	+8.09	+0.9080
16	0.7128	23.15	1.543	323 12	21 32.8	95 43	6 22.9	1.1002	1.2736	8.11	0.9088
17	0.7155	23.26	1.551	323 9	21 32.6	94 39	6 18.6	1.1026	1.2735	8.12	0.9094
18	0.7182	23.33	1.555	323 4	21 32.3	93 35	6 14.3	1.1044	1.2734	8.12	0.9099
$(0^{h}.0)$ 19	0.7210	23.36	1.557	322 58	21 31.9	92 31	6 10.1	1.1054	1.2733	8.13	0.9102
20	0.7237	+23.37	+1.558	322 55	21 31.7	91 27	6 5.8	+1.1059	+1.2732	+8.13	+0.9104
21	0.7265	23.37	1.558	322 54	21 31.6	90 23	6 1.5	1.1060	1.2732	8.14	0.9105
22	0.7292	23.38	1.559	322 59	21 31.9	89 19	5 57.3	1.1057	1.2731	8.14	0.9105
23	0.7319	23.42	1.561	323 9	21 32.6	88 15	5 53.0	1.1056	1.2731	8.13	0.9103
24	0.7347	23.50	1.567	323 22	21 33.5	87 11	5 48.7	1.1058	1.2732	8.13	0.9100
25	0.7374	+23.62	+1.575	323 38	21 34.5	86 7	5 44.5	+1.1065	+1.2732	+8.12	+0.9096
26	0.7402	23.77	1.585	323 53	21 35.5	85 3	5 40.2	1.1078	1.2733	8.11	0.9091
27	0.7429	23.93	1.595	324 7	21 36.5	83 59	5 35.9	1.1096	1.2734	8.10	0.9085
28	0.7456	24.11	1.607	324 16	21 37.1	82 55	5 31.7	1.1120	1.2736	8.08	0.9078
29	0.7484	24.27	1.618	324 21	21 37.4	81 51	5 27.4	1.1143	1.2738	8.06	0.9069
30	0.7511	+24.40	+1.627	324 23	21 37.5	80 47	5 23.1	+1.1166	+1.2740	+8.04	+0.9059
Oct. 1	0.7539	+24.51	+1.634	324 20	21 37.3	79 42	5 18.8	+1.1186	+1.2742	+8.02	+0.9047

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	*f*		*G*		*H*		Log *g*.	Log *h*.	*i*	Log *i*.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	″	s	° ′	h m	° ′	h m			″	
Oct. 1	0.7539	+24.51	+1.634	324 20	21 37.3	79 42	5 18.8	+1.1186	+1.2742	+8.02	+0.9047
2	0.7566	24.57	1.638	324 18	21 37.2	78 38	5 14.5	1.1199	1.2745	8.00	0.9034
3	0.7593	24.62	1.641	324 16	21 37.1	77 33	5 10.2	1.1209	1.2748	7.97	0.9019
4	0.7621	24.65	1.643	324 17	21 37.1	76 29	5 5.9	1.1212	1.2751	7.94	0.9003
$(1^{h}.0)$ 5	0.7648	24.68	1.645	324 22	21 37.5	75 25	5 1.7	1.1213	1.2754	7.91	0.8986
6	0.7676	+24.73	+1.649	324 32	21 38.1	74 21	4 57.4	+1.1213	+1.2757	+7.88	+0.8967
7	0.7703	24.82	1.655	324 46	21 39.1	73 17	4 53.1	1.1216	1.2760	7.85	0.8947
8	0.7730	24.95	1.663	325 4	21 40.3	72 13	4 48.9	1.1222	1.2764	7 81	0.8926
9	0.7758	25.11	1.674	325 23	21 41.5	71 9	4 44.6	1.1233	1.2768	7.77	0.8903
10	0.7785	25.29	1.686	325 41	21 42.7	70 6	4 40.4	1.1250	1.2772	7.73	0.8879
11	0.7813	+25.50	+1.700	325 56	21 43.7	69 2	4 36.1	+1.1272	+1.2776	+7.68	+0.8853
12	0.7840	25.69	1.713	326 7	21 44.5	67 59	4 31.9	1.1295	1.2781	7.63	0.8826
13	0.7867	25.86	1.724	326 12	21 44.8	66 56	4 27.7	1.1320	1.2785	7.58	0.8798
14	0.7894	26.00	1.733	326 14	21 44.9	65 53	4 23.5	1.1341	1.2790	7.53	0.8768
15	0.7922	26.09	1.739	326 13	21 44.9	64 50	4 19.3	1.1357	1.2795	7.48	0.8736
16	0.7949	+26.14	+1.743	326 12	21 44.7	63 47	4 15.1	+1.1367	+1.2800	+7.42	+0.8703
17	0.7976	26.17	1.745	326 12	21 44.7	62 44	4 10.9	1.1372	1.2805	7.36	0.8668
18	0.8003	26.19	1.746	326 14	21 44.9	61 41	4 6.7	1.1374	1.2810	7.30	0.8631
19	0.8031	26.21	1.747	326 22	21 45.5	60 38	4 2.5	1.1371	1 2815	7.24	0.8593
$(2^{h}.0)$ 20	0.8058	26.26	1.751	326 34	21 46.3	59 36	3 58.4	1.1369	1.2821	7.17	0.8553
21	0.8086	+26.35	+1.757	326 49	21 47.3	58 33	3 54.2	+1.1370	+1.2827	+7.10	+0.8512
22	0.8113	26.48	1.765	327 7	21 48.5	57 31	3 50.1	1.1375	1.2833	7.03	0.8469
23	0.8140	26.64	1.776	327 26	21 49.7	56 29	3 45.9	1.1387	1.2839	6.96	0.8424
24	0.8168	26.82	1.788	327 43	21 50.9	55 27	3 41.8	1.1404	1.2845	6.89	0.8377
25	0.8195	27.02	1.801	327 56	21 51.7	54 25	3 37.7	1.1425	1.2851	6.81	0.8328
26	0.8223	+27.22	+1.815	328 6	21 52.4	53 24	3 33.6	+1.1448	+1.2857	+6.73	+0.8277
27	0.8250	27.38	1.825	328 11	21 52.7	52 22	3 29.5	1.1471	1.2864	6.65	0.8225
28	0.8277	27.51	1.834	328 13	21 52.9	51 21	3 25.4	1.1491	1.2870	6.57	0.8171
29	0.8305	27.62	1.841	328 13	21 52.9	50 19	3 21.3	1.1507	1.2876	6.48	0.8114
30	0.8332	27.69	1.846	328 14	21 52.9	49 18	3 17.2	1.1518	1.2883	6.39	0.8055
31	0.8360	+27.75	+1.850	328 18	21 53.2	48 17	3 13.1	+1.1524	+1.2889	+6.30	+0.7994
Nov. 1	0.8387	27.81	1.854	328 26	21 53.7	47 16	3 9.1	1.1527	1.2896	6.21	0.7931
2	0.8414	27.88	1.859	328 37	21 54.5	46 16	3 5.1	1.1530	1.2903	6.12	0.7866
3	0.8442	28.00	1.867	328 53	21 55.5	45 15	3 1.0	1.1535	1.2909	6.02	0.7798
$(3^{h}.0)$ 4	0.8469	28.14	1.876	329 12	21 56.7	44 15	2 57.0	1.1542	1.2916	5.92	0.7727
5	0.8497	+28.32	+1.888	329 32	21 58.1	43 14	2 52.9	+1.1555	+1.2922	+5.82	+0.7654
6	0.8524	28.54	1.903	329 53	21 59.5	42 14	2 48.9	1.1573	1.2929	5.72	0.7578
7	0.8551	28.77	1.918	330 10	22 0.7	41 14	2 44.9	1.1596	1.2935	5.62	0.7500
8	0.8579	29.00	1.933	330 23	22 1.5	40 15	2 41.0	1.1622	1.2942	5.52	0.7418
9	0.8606	29.22	1.948	330 32	22 2.1	39 15	2 37.0	1.1648	1.2948	5.41	0.7334
10	0.8634	+29.41	+1.961	330 36	22 2.4	38 16	2 33.1	+1.1672	+1.2955	+5.31	+0.7247
11	0.8661	29.54	1.969	330 37	22 2.5	37 16	2 29.1	1.1692	1.2961	5.20	0.7157
12	0.8688	29.66	1.977	330 39	22 2.6	36 17	2 25.1	1.1707	1.2967	5.09	0.7063
13	0.8716	29.73	1.982	330 40	22 2.7	35 18	2 21.2	1.1716	1.2974	4.98	0.6966
14	0.8743	29.79	1.986	330 45	22 3.0	34 19	2 17.3	1.1722	1.2980	4.87	0.6865
15	0.8771	+29.84	+1.989	330 52	22 3.5	33 21	2 13.4	+1.1724	+1.2986	+4.75	+0.6760
16	0.8798	+29.92	+1.995	331 5	22 4.3	32 22	2 9.5	+1.1728	+1.2992	+4.63	+0.6651

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		G		H		Log g.	Log h.	i	Log i.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	″	s	° ′	h m	° ′	h m			″	
Nov. 16	0.8798	+29.92	+1.995	331 5	22 4.3	32 22	2 9.5	+1.1728	+1.2992	+4.63	+0.6651
17	0.8825	30.03	2.002	331 20	22 5.3	31 24	2 5.6	1.1733	1.2998	4.51	0.6538
18	0.8853	30.19	2.013	331 38	22 6.5	30 25	2 1.7	1.1742	1.3004	4.39	0.6421
$(4^{h}.0)$ 19	0.8880	30.38	2.025	331 57	22 7.8	29 27	1 57.8	1.1757	1.3010	4.27	0.6299
20	0.8908	30.59	2.039	332 14	22 8.9	28 28	1 53.9	1.1776	1.3016	4.15	0.6172
21	0.8935	+30.82	+2.055	332 28	22 9.9	27 30	1 50.0	+1.1800	+1.3021	+4.02	+0.6040
22	0.8962	31.07	2.071	332 38	22 10.6	26 32	1 46.1	1.1827	1.3026	3.90	0.5902
23	0.8990	31.28	2.085	332 44	22 10.9	25 35	1 42.3	1.1853	1.3031	3.77	0.5758
24	0.9017	31.46	2.097	332 46	22 11.1	24 37	1 38.5	1.1876	1.3036	3.64	0.5608
25	0.9045	31.60	2.107	332 47	22 11.1	23 40	1 34.7	1.1897	1.3041	3.51	0.5451
26	0.9072	+31.73	+2.115	332 48	22 11.2	22 43	1 30.9	+1.1912	+1.3046	+3.38	+0.5286
27	0.9099	31.83	2.122	332 51	22 11.4	21 45	1 27.0	1.1924	1.3051	3.25	0.5113
28	0.9127	31.92	2.128	332 56	22 11.7	20 48	1 23.2	1.1933	1.3055	3.12	0.4932
29	0.9154	32.01	2.134	333 7	22 12.5	19 51	1 19.4	1.1941	1.3060	2.98	0.4743
30	0.9182	32.16	2.144	333 19	22 13.3	18 54	1 15.6	1.1950	1.3064	2.85	0.4542
Dec. 1	0.9209	+32.34	+2.155	333 36	22 14.4	17 57	1 11.8	+1.1962	+1.3068	+2.71	+0.4330
2	0.9236	32.54	2.169	333 54	22 15.6	17 0	1 8.0	1.1979	1.3072	2.58	0.4106
3	0.9263	32.77	2.185	334 11	22 16.7	16 4	1 4.3	1.2001	1.3076	2.44	0.3868
$(5^{h}.0)$ 4	0.9291	33.04	2.203	334 26	22 17.7	15 7	1 0.5	1.2027	1.3079	2.30	0.3615
5	0.9318	33.30	2.222	334 37	22 18.5	14 10	0 56.7	1.2055	1.3082	2.16	0.3345
6	0.9345	+33.57	+2.238	334 45	22 19.0	13 14	0 52.9	+1.2085	+1.3085	+2.02	+0.3054
7	0.9372	33.80	2.253	334 48	22 19.2	12 17	0 49.1	1.2111	1.3088	1.88	0.2741
8	0.9400	33.99	2.265	334 48	22 19.2	11 20	0 45.3	1.2134	1.3090	1.74	0.2403
9	0.9427	34.13	2.275	334 47	22 19.1	10 24	0 41.6	1.2155	1.3093	1.60	0.2035
10	0.9455	34.24	2.283	334 47	22 19.1	9 28	0 37.9	1.2169	1.3095	1.46	0.1631
11	0.9482	+34.34	+2.289	334 48	22 19.2	8 32	0 34.1	+1.2180	+1.3097	+1.31	+0.1184
12	0.9509	34.42	2.295	334 53	22 19.5	7 35	0 30.3	1.2190	1.3099	1.17	0.0684
13	0.9537	34.51	2.301	335 1	22 20.1	6 39	0 26.6	1.2196	1.3100	1.03	0.0118
14	0.9564	34.64	2.309	335 12	22 20.8	5 43	0 22.9	1.2205	1.3102	0.89	9.9463
15	0.9592	34.80	2.320	335 26	22 21.7	4 47	0 19.1	1.2217	1.3103	0.75	9.8692
16	0.9619	+35.01	+2.334	335 40	22 22.7	3 51	0 15.4	+1.2234	+1.3104	+0.60	+9.7751
17	0.9646	35.24	2.349	335 53	22 23.5	2 55	0 11.7	1.2256	1.3104	0.45	9.6544
18	0.9674	35.49	2.366	336 3	22 24.2	1 59	0 7.9	1.2281	1.3105	0.31	9.4873
19	0.9701	35.75	2.383	336 10	22 24.7	1 3	0 4.2	1.2308	1.3106	0.16	9.2111
$(6^{h}.0)$ 20	0.9729	35.98	2.399	336 13	22 24.9	0 7	0 0.5	1.2335	1.3106	+0.02	+8.2504
21	0.9756	+36.20	+2.413	336 13	22 24.9	359 11	23 56.7	+1.2361	+1.3106	−0.13	−9.1035
22	0.9783	36.38	2.425	336 11	22 24.7	358 15	23 53.0	1.2384	1.3105	0.27	9.4339
23	0.9811	36.53	2.435	336 8	22 24.5	357 18	23 49.2	1.2402	1.3105	0.42	9.6194
24	0.9838	36.64	2.443	336 7	22 24.5	356 22	23 45.5	1.2417	1.3104	0.56	9.7488
25	0.9866	36.75	2.450	336 8	22 24.5	355 26	23 41.7	1.2429	1.3103	0.71	9.8481
26	0.9893	+36.86	+2.457	336 13	22 24.9	354 30	23 38.0	+1.2440	+1.3102	−0.85	−9.9291
27	0.9920	36.99	2.466	336 20	22 25.3	353 34	23 34.3	1.2450	1.3101	0.99	9.9970
28	0.9948	37.16	2.477	336 31	22 26.1	352 37	23 30.5	1.2465	1.3099	1.14	0.0557
29	0.9975	37.36	2.491	336 43	22 26.9	351 41	23 26.7	1.2481	1.3097	1.29	0.1071
30	1.0003	37.59	2.506	336 55	22 27.7	350 44	23 22.9	1.2502	1.3095	1.43	0.1531
31	1.0030	+37.85	+2.523	337 5	22 28.3	349 48	23 19.2	+1.2527	+1.3093	−1.57	−0.1945
32	1.0057	+38.14	+2.543	337 13	22 28.9	348 51	23 15.4	+1.2555	+1.3091	−1.71	−0.2332

MEAN PLACES FOR 1892.0. (January 0^d.165, Washington.)

Name of Star.	Magni-tude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	s	°	′	″	″
α Andromedæ	2.1	0	2	48.299	+ 3.0919	+ 28	29	38.84	+ 19.884
* β Cassiopeæ	2.4	0	3	24.946	3.1755	+ 58	33	13.51	19.851
* 22 Andromedæ	4.9	0	4	42.485	3.1031	+ 45	28	15.76	20.035
4 Draconis (H.) S.P.	5.1	0	7	8.559	2.8828	+101	47	1.06	20.022
γ Pegasi (*Algenib*)	2.8	0	7	40.456	3.0840	+ 14	34	59.09	20.023
* σ Andromedæ	4.4	0	12	41.166	+ 3.1236	+ 36	11	10.91	+ 19.982
* ι Ceti	3.6	0	13	55.334	3.0527	− 9	25	22.60	19.956
* 6 Ursæ Minoris S.P.	6.2	0	14	20.732	0.1810	+ 91	42	4.45	19.940
* 44 Piscium	5.8	0	19	51.956	3.0732	+ 1	20	29.58	19.953
β Hydri	2.8	0	20	4.003	3.2274	− 77	51	45.23	20.283
12 Ceti	6.0	0	24	31.611	+ 3.0611	− 4	33	14.59	+ 19.936
κ Draconis S.P.	3.8	0	28	52.407	2.5905	+109	36	59.33	19.888
* π Andromedæ	4.4	0	31	6.718	3.1912	+ 33	7	28.89	19.870
α Cassiopeæ (*var.*)	2.3	0	34	22.800	3.3752	+ 55	56	41.60	19.787
β Ceti	2.2	0	38	10.120	3.0141	− 18	34	46.51	19.800
21 Cassiopeæ	5.7	0	38	30.941	+ 3.8618	+ 74	23	51.57	+ 19.750
* ο Cassiopeæ	4.7	0	38	42.384	3.3203	+ 47	41	35.25	19.753
* δ Piscium	4.8	0	43	4.704	3.1076	+ 6	59	49.91	19.651
32^2 Camelop. (H.) S.P.	5.2	0	48	20.251	0.3982	+ 96	0	0.43	19.596
* γ Cassiopeæ	2.3	0	50	11.440	3.5808	+ 60	7	54.08	19.561
* μ Andromedæ	4.0	0	50	45.479	+ 3.3119	+ 37	54	48.72	+ 19.614
* 43 Cephei (H.)	4.6	0	54	2.711	7.2702	+ 85	40	39.02	19.497
ε Piscium	4.3	0	57	20.257	3.1093	+ 7	18	30.78	19.452
β Andromedæ	2.2	1	3	41.115	3.3450	+ 35	2	52.04	19.162
* κ Tucanæ	4.9	1	12	6.521	2.0547	− 69	26	58.81	19.168
* *f* Piscium	5.1	1	12	13.641	+ 3.0898	+ 3	2	44.16	+ 19.035
θ^1 Ceti	3.6	1	18	37.483	2.9971	− 8	44	26.82	18.664
α Ursæ Minoris (*Polaris*)	2.2	1	19	18.155	23.6930	+ 88	43	56.15	18.864
38 Cassiopeæ	5.9	1	23	11.688	4.3815	+ 69	42	30.62	18.671
* κ Octantis S.P.	5.4	1	23	33.168	8.7840	− 94	46	4.90	18.736
η Piscium	3.7	1	25	42.230	+ 3.2029	+ 14	47	20.12	+ 18.660
* υ Andromedæ	4.2	1	30	27.535	3.5053	+ 40	51	54.85	18.141
* π Piscium	5.5	1	31	22.389	3.1744	+ 11	35	20.68	18.528
α Eridani (*Achernar*)	0.4	1	33	41.159	2.2321	− 57	47	8.10	18.354
* ν Piscium	4.6	1	35	48.644	3.1180	+ 4	56	27.26	18.325
ο Piscium	4.4	1	39	41.420	+ 3.1625	+ 8	36	49.70	+ 18.212
* ζ Ceti	3.6	1	46	7.771	2.9618	− 10	52	11.30	17.818
β Arietis	2.8	1	48	40.396	3.3040	+ 20	16	47.55	17.723
50 Cassiopeæ	4.1	1	54	12.870	5.0159	+ 71	53	54.19	17.637
* γ Andromedæ	2.2	1	57	16.169	3.6614	+ 41	48	40.29	17.436
α Arietis	2.1	2	1	5.090	+ 3.3715	+ 22	57	5.38	+ 17.167
α Draconis S.P.	3.7	2	1	27.978	1.6239	+115	6	28.88	17.296
* β Trianguli	3.1	2	3	7.040	3.5553	+ 34	28	34.26	17.197
ξ^1 Ceti	4.5	2	7	16.536	+ 3.1743	+ 8	20	23.31	17.024
* 4 Ursæ Minoris S.P.	4.9	2	9	16.381	− 0.3188	+101	56	41.76	16.906
* γ Trianguli	4.3	2	10	53.610	+ 3.5517	+ 33	20	50.88	+ 16.838
* 67 Ceti	5.6	2	11	35.748	2.9895	− 6	55	12.70	16.727
* δ Hydri	4.2	2	19	49.725	1.0555	− 69	9	3.05	16.448
ι Cassiopeæ	4.6	2	20	9.879	4.8656	+ 66	54	59.05	16.423
ξ^2 Ceti	4.5	2	22	25.006	+ 3.1840	+ 7	58	32.32	+ 16.288

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1892.0. (January 0d.165, Washington.)

Name of Star.		Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
			h	m	s	s	°	′	″	″
5 Ursæ Minoris .	S.P.	4.5	2	27	45.422	− 0.1872	+103	49	26.17	+ 16.012
* δ Ceti . . .		4.1	2	33	56.815	+ 3.0730	− 0	8	16.26	15.690
* μ Hydri . . .		5.3	2	33	57.678	− 1.4287	− 79	34	48.88	15.684
* θ Persei . . .		4.2	2	36	49.410	+ 4.0711	+ 48	46	16.33	15.448
γ Ceti . . .		3.6	2	37	42.233	3.1035	+ 2	46	49.23	15.332
* σ Arietis . . .		5.5	2	45	31.770	+ 3.3049	+ 14	38	11.94	+ 15.006
β Ursæ Minoris .	S.P.	2.2	2	51	1.367	− 0.2284	+105	24	11.39	14.720
* 47 Cephei (H.) . .		5.7	2	51	44.287	+ 7.7335	+ 78	59	27.56	14.677
* ε Arietis . . .		4.6	2	53	2.171	3.4215	+ 20	54	29.31	14.602
α Ceti . . .		2.6	2	56	38.000	3.1306	+ 3	39	56.46	14.301
* β Persei (*Algol*) (*var.*)		2.3	3	1	8.463	+ 3.8845	+ 40	32	20.54	+ 14.110
48 Cephei (H.) . .		5.5	3	6	37.524	7.4160	+ 77	20	13.42	13.711
ζ Arietis . . .		4.8	3	8	41.593	3.4398	+ 20	38	37.70	13.547
α Persei . . .		1.9	3	16	36.777	4.2588	+ 49	28	34.50	13.082
* ρ Octantis . .	S.P.	5.7	3	18	26.874	+13.0136	− 95	53	46.98	12.950
* ι Hydri . . .		5.7	3	18	39.478	− 1.5933	− 77	46	57.36	+ 13.030
γ^2 Ursæ Minoris .	S.P.	3.2	3	20	54.146	− 0.1317	+107	46	54.16	12.811
* *f* Tauri . . .		4.3	3	24	54.575	+ 3.3053	+ 12	33	58.52	12.560
ε Eridani . . .		3.7	3	27	50.508	2.8238	− 9	49	26.22	12.386
δ Persei . . .		3.1	3	35	14.152	4.2511	+ 47	26	29.78	11.798
* γ Camelopardalis (H.).		4.6	3	38	57.603	+ 6.2425	+ 70	59	55.09	+ 11.526
η Tauri . . .		3.1	3	41	3.824	3.5573	+ 23	46	14.41	11.370
ζ Persei . . .		3.0	3	47	20.575	+ 3.7608	+ 31	33	44.18	10.939
ζ Ursæ Minoris .	S.P.	4.6	3	47	55.445	− 2.2463	+101	52	24.62	10.928
* γ Hydri . . .		3.3	3	48	54.765	− 0.9939	− 74	34	11.28	10.984
* ε Persei . . .		3.0	3	50	36.312	+ 4.0107	+ 39	41	49.98	+ 10.710
γ Eridani . . .		3.0	3	52	59.467	2.7987	− 13	48	58.07	10.437
* A^1 Tauri . . .		4.6	3	58	18.616	3.5403	+ 21	47	10.04	10.073
* *c* Persei . . .		4.3	4	0	49.245	4.3380	+ 47	25	24.62	9.927
Groombr. 2320 .	S.P.	5.5	4	6	1.464	0.1408	+111	54	18.86	9.498
* o^1 Eridani . . .		4.2	4	6	35.605	+ 2.9269	− 7	7	10.78	+ 9.607
γ Tauri . . .		3.8	4	13	38.827	+ 3.4092	+ 15	21	58.98	8.948
* η Ursæ Minoris .	S.P.	5.0	4	20	39.844	− 1.8135	+103	59	45.36	8.168
ε Tauri . . .		3.6	4	22	18.584	+ 3.4977	+ 18	56	25.31	8.247
η Draconis . .	S.P.	2.0	4	22	31.868	+ 0.8068	+118	14	28.76	8.219
* δ Mensæ . . .		5.6	4	25	17.489	− 4.2167	− 80	28	1.15	+ 8.058
* *m* Persei . . .		6.0	4	25	48.969	+ 4.2108	+ 42	49	56.81	7.991
A Draconis . .	S.P.	5.0	4	28	11.907	− 0.1339	+110	59	54.27	7.799
α Tauri (*Aldebaran*) .		1.0	4	29	43.389	+ 3.4377	+ 16	17	30.04	7.505
* τ Tauri . . .		4.5	4	35	45.749	3.5957	+ 22	44	57.02	7.179
α Camelopardalis .		4.4	4	43	18.668	+ 5.9267	+ 66	9	29.84	+ 6.584
* *i* Tauri . . .		5.2	4	45	3.357	3.5056	+ 18	39	19.55	6.395
ι Aurigæ . . .		2.8	4	49	57.617	3.9010	+ 32	59	40.27	6.012
* ζ Aurigæ . . .		3.9	4	54	55.713	+ 4.1855	+ 40	55	3.30	5.611
ε Ursæ Minoris .	S.P.	4.5	4	57	2.957	− 6.3235	+ 97	47	8.73	5.442
11 Orionis . . .		4.7	4	58	23.828	+ 3.4246	+ 15	15	11.27	+ 5.286
* β Eridani . . .		2.9	5	2	32.412	2.9486	− 5	13	35.21	4.917
α Aurigæ (*Capella*) .		0.1	5	8	42.640	4.4252	+ 45	53	14.74	4.016
β Orionis (*Rigel*) .		0.3	5	9	20.841	2.8814	− 8	19	36.74	4.390
* τ Orionis . . .		3.8	5	12	21.732	+ 2.9127	− 6	57	42.17	+ 4.127

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MEAN PLACES FOR 1892.0. (January 0ᵈ.165, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
β Tauri . . .	1.8	5 19 27.875	+ 3.7895	+ 28 30 56.19	+ 3.318
Groombridge 966 .	6.4	5 25 17.559	8.0025	+ 74 58 15.83	3.041
χ Aurigæ . . .	5.0	5 25 41.988	3.9052	+ 32 6 42.75	3.015
δ Orionis (*var.*) . .	2.3	5 26 29.336	3.0635	− 0 22 46.48	2.917
* Groombridge 944 .	6.4	5 27 25.669	18.6675	+ 85 8 28.30	2.853
α Leporis . . .	2.7	5 27 58.007	+ 2.6448	− 17 54 0.02	+ 2.793
ε Orionis . . .	1.8	5 30 43.978	3.0424	− 1 16 16.88	2.555
α Columbæ . .	2.7	5 35 44.358	+ 2.1728	− 34 7 55.51	2.074
ω Draconis . . S.P.	4.9	5 37 35.095	− 0.3535	+111 11 31.97	1.634
* κ Orionis . . .	2.3	5 42 38.030	+ 2.8449	− 9 42 30.41	1.521
ψ^1 Draconis . . S.P.	4.8	5 43 51.520	− 1.0786	+107 47 54.16	+ 1.684
* ν Aurigæ . . .	4.1	5 44 0.227	+ 4.1545	+ 39 6 58.36	1.435
* δ Doradus . . .	4.4	5 44 34.964	0.1050	− 65 46 33.55	1.328
α Orionis (*var.*) . .	0.9	5 49 19.479	3.2471	+ 7 23 11.02	0.941
* β Aurigæ . . .	2.0	5 51 36.415	4.4018	+ 44 56 8.44	0.724
* θ Aurigæ . . .	2.9	5 52 21.440	+ 4.0921	+ 37 12 15.82	+ 0.580
ν Orionis . . .	4.5	6 1 24.398	3.4274	+ 14 46 50.85	− 0.154
22 Camelopardalis (H.).	4.7	6 6 56.438	+ 6.6171	+ 69 21 24.14	0.725
δ Ursæ Minoris . S.P.	4.4	6 7 8.703	−19.4715	+ 93 23 16.83	0.676
* η Geminorum . .	3.5	6 8 21.545	+ 3.6228	+ 22 32 15.26	0.747
μ Geminorum . .	3.2	6 16 25.637	+ 3.6314	+ 22 34 6.20	− 1.558
* ψ^1 Aurigæ . . .	5.1	6 16 34.870	4.6264	+ 49 20 32.19	1.461
α Argûs (*Canopus*) .	-0.8	6 21 33.347	1.3305	− 52 38 12.42	1.874
* ν Geminorum . .	4.2	6 22 33.016	+ 3.5630	+ 20 16 47.66	1.992
* χ Draconis . . S.P.	5.3	6 23 0.176	− 1.0798	+107 18 51.26	1.634
γ Geminorum . .	2.0	6 31 28.376	+ 3.4673	+ 16 29 27.33	− 2.798
* ε Geminorum . .	3.2	6 37 17.233	3.6933	+ 25 14 15.06	3.262
* ψ^5 Aurigæ . . .	5.4	6 38 57.234	4.3287	+ 43 41 3.26	3.244
† α Canis Majoris (*Sirius*)	-1.4	6 40 23.345	2.6436	− 16 34 6.16	4.722
* θ Geminorum . .	3.7	6 45 40.292	+ 3.9604	+ 34 5 27.56	4.001
* ζ Mensæ . .	5.6	6 49 1.752	− 4.9061	− 80 41 57.80	− 4.176
51 Cephei (H.) . .	5.3	6 49 45.027	+29.8425	+ 87 12 56.44	4.411
50 Draconis . S.P.	5.6	6 49 51.240	− 1.9094	+104 41 37.09	4.403
ε Canis Majoris . .	1.5	6 54 22.904	+ 2.3577	− 28 49 32.00	4.726
* ζ Geminorum (*var.*) .	4.0	6 57 42.247	3.5623	+ 20 43 41.19	5.014
δ Canis Majoris . .	1.9	7 3 59.993	+ 2.4385	− 26 13 19.12	− 5.518
* 63 Aurigæ . . .	5.2	7 4 13.636	4.1362	+ 39 29 46.58	5.528
* 25 Camelopardalis .	5.3	7 8 20.554	+12.9463	+ 82 37 4.62	5.923
* γ^2 Volantis (*var.*) .	3.9	7 9 39.600	− 0.4944	− 70 19 25.88	6.003
δ Draconis . . S.P.	3.1	7 12 31.797	+ 0.0289	+112 31 42.41	6.326
δ Geminorum . .	3.5	7 13 40.396	+ 3.5877	+ 22 10 50.33	− 6.351
τ Draconis . . S.P.	4.5	7 17 37.785	− 1.1185	+106 50 42.60	6.771
Piazzi vii. 67 . .	5.7	7 19 38.583	+ 6.2965	+ 68 41 7.61	6.867
* β Canis Minoris . .	3.1	7 21 17.674	3.2596	+ 8 30 23.08	7.002
α^2 Geminorum (*Castor*)	1.9	7 27 42.609	+ 3.8381	+ 32 7 30.02	7.565
λ Ursæ Minoris . S.P.	6.5	7 31 24.511	−65.5990	+ 91 1 43.68	− 7.796
† α Canis Min. (*Procyon*)	0.5	7 33 38.909	+ 3.1433	+ 5 30 4.76	9.004
β Geminorum (*Pollux*)	1.2	7 38 42.455	3.6789	+ 28 17 11.60	8.428
* 26 Lyncis . . .	5.8	7 46 50.874	4.3874	+ 47 50 37.93	9.034
φ Geminorum . .	5.0	7 46 53.283	+ 3.6796	+ 27 2 41.72	− 9.041

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

† Periodic corrections given in the Appendix are still to be applied to the positions of Sirius and Procyon.

MEAN PLACES FOR 1892.0. (January 0d.165, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
* Groombridge 1374 .	5.6	7 47 15.562	+ 7.2812	+ 74 12 19.62	— 9.080
ε Draconis . . S.P.	3.9	7 48 32.095	— 0.1804	+110 0 25.64	9.173
* ω¹ Cancri . . .	6.0	7 54 23.825	+ 3.6370	+ 25 41 17.23	9.595
3 Ursæ Majoris (H.) .	5.5	8 2 3.926	6.0459	+ 68 47 28.23	10.180
15 Argûs (ρ) . .	3.1	8 2 56.678	2.5545	— 23 59 35.71	10.203
* ζ¹ Cancri . . .	4.8	8 6 1.090	+ 3.4462	+ 17 58 20.92	— 10.614
* β Cancri . . .	3.8	8 10 39.498	+ 3.2583	+ 9 31 4.35	10.866
κ Cephei (*pr.*) . S.P.	4.4	8 12 31.106	— 1.9274	+102 36 50.43	10.988
* 30 Monocerotis . .	3.9	8 20 15.822	+ 2.9999	— 3 33 15.75	11.515
* θ Chamæleontis . .	4.6	8 23 52.192	— 1.7145	— 77 8 9.01	11.755
η Cancri . . .	5.4	8 26 27.850	+ 3.4780	+ 20 48 27.45	— 12.014
Groombr. 3241 . S.P.	6.5	8 30 28.219	— 0.2216	+107 50 3.22	12.220
* σ Hydræ . . .	4.5	8 33 6.879	+ 3.1457	+ 3 43 12.72	12.443
* γ Cancri . . .	4.9	8 37 2.192	3.4801	+ 21 51 23.28	12.733
ε Hydræ . . .	3.5	8 41 3.432	3.1816	+ 6 48 52.85	13.014
* σ² Cancri (*mean*) . .	5.5	8 47 39.327	+ 3.6729	+ 30 59 16.88	— 13.417
ι Ursæ Majoris . .	3.3	8 51 48.732	+ 4.1322	+ 48 27 54.93	13.915
12 Year Cat. 1879 S.P.	5.3	8 52 28.543	— 2.5572	+ 99 51 10.80	13.676
σ² Ursæ Majoris . .	5.0	9 0 53.218	+ 5.3514	+ 67 34 21.19	14.289
κ Cancri . . .	5.1	9 1 53.902	3.2556	+ 11 6 9.29	14.299
* θ Hydræ . . .	4.0	9 8 44.761	+ 3.1260	+ 2 46 10.36	— 15.026
* β Argûs . . .	2.0	9 12 0.767	0.6768	— 69 16 20.44	14.807
ι Argûs . . .	2.6	9 14 11.777	1.6011	— 58 49 18.59	15.001
* α Lyncis . . .	3.3	9 14 28.487	3.6685	+ 34 50 55.41	15.035
α Cephei . . S.P.	2.6	9 16 0.129	1.4364	+117 52 19.19	15.177
1 Draconis (H.) . .	4.5	9 21 39.7[illegible]0	+ 8.9791	+ 81 48 11.00	— 15.473
α Hydræ . . .	2.1	9 22 16.823	2.9491	— 8 11 26.71	15.458
d Ursæ Majoris . .	4.8	9 24 55.520	5.3966	+ 70 18 16.18	15.574
θ Ursæ Majoris . .	3.2	9 25 37.878	4.0397	+ 52 10 8.88	16.228
β Cephei (*pr.*) . S.P.	3.4	9 27 15.892	0.7932	+109 54 48.41	15.758
* 10 Leonis Minoris .	4.7	9 27 36.459	+ 3.6934	+ 36 52 36.46	— 15.791
* ο Leonis . . .	3.8	9 35 23.196	+ 3.2067	+ 10 23 0.14	16.229
* ζ Chamæleontis . .	5.2	9 37 3.242	— 1.5698	— 80 27 21.55	16.283
ε Leonis . . .	3.2	9 39 43.261	+ 3.4147	+ 24 16 16.44	16.434
11 Cephei . . S.P.	4.8	9 40 20.434	0.9005	+109 11 8.87	16.541
μ Leonis . . .	4.0	9 46 37.284	+ 3.4217	+ 26 30 55.33	— 16.804
* 19 Leonis Minoris .	5.2	9 51 4.194	3.6944	+ 41 34 10.92	16.970
79 Draconis . . S.P.	6.6	9 51 31.093	0.7280	+106 48 30.92	17.015
* π Leonis . . .	5.0	9 54 30.377	3.1741	+ 8 33 43.74	17.143
α Leonis (*Regulus*) .	1.3	10 2 37.230	3.2003	+ 12 29 41.41	17.480
32 Ursæ Majoris . .	5.7	10 10 11.284	+ 4.4178	+ 65 38 48.08	— 17.819
* λ Ursæ Majoris . .	3.6	10 10 34.960	3.6386	+ 43 27 11.41	17.880
γ¹ Leonis . . .	2.5	10 14 1.100	3.3145	+ 20 23 15.59	18.097
* μ Hydræ . . .	4.1	10 20 52.072	2.9008	— 16 17 7.62	18.315
* β Leonis Minoris .	4.3	10 21 38.292	3.4858	+ 37 15 37.75	18.321
* α Antliæ . . .	4.5	10 22 12.555	+ 2.7393	— 30 31 6.25	— 18.222
9 Draconis (H.) . .	5.0	10 25 54.782	5.2559	+ 76 16 8.31	18.403
ρ Leonis . . .	4.0	10 27 7.512	3.1639	+ 9 51 43.69	18.437
226 Cephei (B.) . S.P.	5.7	10 30 22.690	1.0766	+104 19 48 58	18.530
* β Octantis . . S.P.	4.4	10 34 59.434	+ 6.4680	— 98 3 10.05	— 18.690

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MEAN PLACES FOR 1892.0. (January 0d.165, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
* 41 Leonis Minoris	5.1	10 37 32.625	+ 3.2703	+ 23 45 13.22	− 18.743
η Argûs (*var.*)	1–6	10 40 52.217	2.3140	− 59 7 0.45	18.873
l Leonis	5.3	10 43 34.861	3.1583	+ 11 6 59.47	18.977
* δ² Chamæleontis	4.7	10 44 46.161	0.6354	− 79 58 14.98	18.983
ι Cephei S.P.	3.6	10 45 50.046	2.1224	+114 22 3.60	18.879
* 46 Leonis Minoris	3.9	10 47 16.298	+ 3.3689	+ 34 47 49.89	− 19.300
* Groombridge 1706	6.3	10 51 18.273	4.9617	+ 78 20 55.10	19.187
α Ursæ Majoris	2.0	10 57 3.633	+ 3.7453	+ 62 20 2.26	19.368
* η Octantis	6.1	11 0 4.496	− 0.2220	− 84 0 46.54	19.371
* p³ Leonis	6.2	11 1 23.580	+ 3.0597	+ 2 32 30.05	19.487
* ψ Ursæ Majoris	3.2	11 3 35.458	+ 3.3924	+ 45 5 2.60	− 19.507
δ Leonis	2.7	11 8 21.897	3.1979	+ 21 6 55.04	19.689
* ν Ursæ Majoris	3.7	11 12 38.868	3.2570	+ 33 41 0.93	19.576
δ Crateris	3.9	11 13 56.487	2.9966	− 14 11 39.53	19.467
ο Cephei S.P.	5.1	11 14 11.556	2.4451	+112 28 45.43	19.671
τ Leonis	5.1	11 22 22.986	+ 3.0860	+ 3 27 3.36	− 19.804
λ Draconis	4.0	11 24 59.287	3.6186	+ 69 55 37.46	19.840
* ξ Hydræ	3.8	11 27 41.368	2.9434	− 31 15 36.72	19.887
υ Leonis	4.4	11 31 25.145	3.0713	− 0 13 39.32	19 862
γ Cephei S.P.	3.5	11 34 54.798	2.4174	+102 58 13.88	20.076
* χ Ursæ Majoris	3.9	11 40 20.857	+ 3.1895	+ 48 22 41.33	− 19.963
β Leonis	2.2	11 43 33.059	3.0638	+ 15 10 32.61	20.120
γ Ursæ Majoris	2.4	11 48 9.026	3.1807	+ 54 17 42.40	20.028
Groombr. 4163 S.P.	7.0	11 49 34.943	2.8675	+106 11 26.59	20.023
* π Virginis	4.6	11 55 20.282	3.0741	+ 7 12 58.92	20.087
ο Virginis	4.3	11 59 42.455	+ 3.0575	+ 9 19 58.10	− 20.015
* ε Corvi	3.2	12 4 34.200	3.0833	− 22 1 8.66	20.049
4 Draconis (H.)	5.1	12 7 8.559	2.8828	+ 78 12 58.94	20.022
γ Corvi	2.7	12 10 15.126	3.0798	− 16 56 32.23	20.017
* 2 Canum Venaticorum	6.0	12 10 42.868	3.0215	+ 41 15 41.32	20.065
β Chamæleontis	4.5	12 12 1.089	+ 3.4048	− 78 42 44.38	− 20.002
* 6 Ursæ Minoris	6.2	12 14 20.732	0.1810	+ 88 17 55.55	19.940
η Virginis	4.0	12 14 22.837	3.0687	− 0 4 0.00	20.041
α¹ Crucis	0.9	12 20 35.615	3.2970	− 62 30 1.71	20.012
* δ² Corvi	3.1	12 24 16.695	3.1028	− 15 54 50.18	20.083
* β Canum Venaticorum	4.4	12 28 36.835	+ 2.8591	+ 41 56 39.46	− 19.614
β Corvi	2.8	12 28 42.831	3.1420	− 22 47 58.19	19.962
κ Draconis	3.8	12 28 52.407	2.5905	+ 70 23 0.67	19.888
* γ Virginis (*mean*)	2.9	12 36 11.287	3.0384	− 0 51 26.02	19.810
21 Cassiopeæ S.P.	5.7	12 38 30.941	3.8618	+105 36 8.43	19.750
* 31 Comæ Berenices	5.1	12 46 26.385	+ 2.9299	+ 28 7 41.96	− 19.659
32² Camelopardalis (H.)	5.2	12 48 20.251	0.3982	+ 83 59 59.57	19.596
* γ Cassiopeæ S.P.	2.3	12 50 11.440	3.5808	+119 52 5.92	19.561
α Canum Venaticorum	3.2	12 50 58.591	2.8151	+ 38 54 5.90	19.510
* 43 Cephei (H.) S.P.	4.6	12 54 2.711	7.2702	+ 94 19 20.98	19.497
* δ Muscæ	3.8	12 54 51.413	+ 4.1578	− 70 57 57.07	− 19.472
* ε Virginis	3.1	12 56 48.079	2.9879	+ 11 32 22.78	19.415
θ Virginis	4.6	13 4 21.452	3.1013	− 4 57 44.54	19.309
* 20 Canum Venaticorum	4.7	13 12 41.992	2.6964	+ 41 8 28.43	19.032
α Urs. Min. (*Polaris*) S.P.	2.2	13 19 18.155	+ 23.6930	+ 91 16 3.85	− 18.864

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MEAN PLACES FOR 1892.0. (January 0^d.165, Washington.)

	Name of Star.		Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
				h m s	s	° ′ ″	″
	α Virginis (*Spica*)	.	1.1	13 19 30.174	+ 3.1540	− 10 35 51.15	− 18.896
	38 Cassiopeæ .	S. P.	5.9	13 23 11.688	4.3815	+110 17 29.38	18.671
*	κ Octantis . .	.	5.4	13 23 33.168	8.7840	− 85 13 55.10	18.736
	ζ Virginis . .	.	3.6	13 29 11.382	3.0533	− 0 2 36.94	18.514
*	B. A. C. 4536 .	.	5.0	13 29 58.433	2.6821	+ 37 44 8.73	18.535
*	*m* Virginis . .	.	5.4	13 35 56.604	+ 3.1435	− 8 9 28.14	− 18.281
	η Ursæ Majoris .	.	1.9	13 43 17.153	2.3710	+ 49 51 8.29	18.075
	η Bootis . .	.	2.8	13 49 32.551	2.8567	+ 18 56 21.30	18.166
	50 Cassiopeæ .	S. P.	4.1	13 54 12.870	5.0159	+108 6 5.81	17.637
*	θ Apodis . .	.	Var.	13 54 49.195	5.6821	− 76 16 28.67	17.582
	β Centauri . .	.	0.7	13 56 12.010	+ 4.1799	− 59 51 6.49	− 17.583
*	π Hydræ . .	.	3.6	14 0 13.211	3.4014	− 26 9 40.10	17.358
	α Draconis . .	.	3.7	14 1 27.978	1.6239	+ 64 53 31.12	17.296
*	*d* Bootis . .	.	4.8	14 5 28.451	2.7387	+ 25 36 12.10	17.195
*	κ Virginis . .	.	4.2	14 7 8.075	+ 3.1942	− 9 46 15.16	16.919
*	4 Ursæ Minoris .	.	4.9	14 9 16.381	− 0.3188	+ 78 3 18.24	− 16.906
*	δ Octantis . .	.	5.0	14 9 39.331	+ 9.0032	− 83 10 19.94	16.937
	α Bootis (*Arcturus*)	.	0.2	14 10 44.124	2.7351	+ 19 44 41.34	18.879
*	λ Bootis . .	.	4.3	14 12 16.674	2.2826	+ 46 35 3.50	16.656
*	λ Virginis . .	.	4.7	14 13 15.943	3.2383	− 12 52 25.77	16.740
	ι Cassiopeæ .	S. P.	4.6	14 20 9.879	+ 4.8656	+113 5 0.95	− 16.423
	θ Bootis . .	.	4.1	14 21 31.273	2.0441	+ 52 20 59.99	16.758
	ρ Bootis . .	.	3.6	14 27 10.600	+ 2.5877	+ 30 50 44.06	15.955
	5 Ursæ Minoris .	.	4.5	14 27 45.422	− 0.1872	+ 76 10 33.83	16.012
	α^2 Centauri . .	.	0.2	14 32 17.139	+ 4.0478	− 60 23 33.36	15.368
*	μ Hydri . .	S. P.	5.3	14 33 57.678	− 1.4287	−100 25 11.12	− 15.684
*	α Apodis . .	.	4.1	14 34 28 080	+ 7.2049	− 78 35 8.63	15.669
*	33 Bootis . .	.	5.3	14 34 49.076	2.2343	+ 44 52 14.01	15.706
	ε Bootis . .	.	2.6	14 40 16.285	2.6213	+ 27 31 46.76	15.336
	α^2 Libræ . .	.	2.9	14 44 54.181	+ 3.3099	− 15 35 33.86	15.162
	β Ursæ Minoris .	.	2.2	14 51 1.367	− 0.2284	+ 74 35 48.61	− 14.720
*	47 Cephei (H.) .	S. P.	5.7	14 51 44.287	+ 7.7335	+101 0 32.44	14.677
*	γ Scorpii . .	.	3.4	14 57 44.910	3.4999	− 24 51 25.86	14.370
	β Bootis . .	.	3.7	14 57 52.697	2.2601	+ 40 48 59.88	14.356
	48 Cephei (H.) .	S. P.	5.5	15 6 37.524	7.4160	+102 39 46.58	13.711
*	δ Bootis . .	.	3.5	15 11 8.968	+ 2.4209	+ 33 43 5.05	− 13.578
	β Libræ . .	.	2.9	15 11 11.698	3.2221	− 8 59 3.02	13.501
*	ρ Octantis . .	.	5.7	15 18 26.874	13.0136	− 84 6 13.02	12.950
	μ^1 Bootis . .	.	4.5	15 20 24.650	+ 2.2663	+ 37 45 22.19	12.774
	γ^2 Ursæ Minoris .	.	3.2	15 20 54.146	− 0.1317	+ 72 13 5.84	12.811
*	β Coronæ Borealis	.	3.9	15 23 22.607	+ 2.4751	+ 29 28 40.94	− 12.588
	α Coronæ Borealis	.	2.3	15 30 6.934	2.5394	+ 27 4 42.04	12.299
	α Serpentis . .	.	2.7	15 38 56.890	2.9518	+ 6 45 56.13	11.543
*	γ Camelop. (H.) .	S. P.	4.6	15 38 57.603	6.2425	+109 0 4.91	11.526
	ε Serpentis . .	.	3.7	15 45 25.943	+ 2.9873	+ 4 48 11.40	11.041
	ζ Ursæ Minoris .	.	4.6	15 47 55.445	− 2.2463	+ 78 7 35.38	− 10.928
	ε Coronæ Borealis	.	4.1	15 53 7.042	+ 2.4833	+ 27 11 27.02	10.605
	δ Scorpii . .	.	2.6	15 53 56.841	3.5390	− 22 18 50.08	10.518
	β^1 Scorpii . .	.	2.9	15 59 9.434	3.4811	− 19 30 34.18	10.129
*	δ^1 Apodis . .	.	4.9	16 4 13.291	+ 8.7830	− 78 25 20.07	− 9.705

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MEAN PLACES FOR 1892.0. (January 0^d.165, Washington.)

Name of Star.	Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	s	°	′	″	″
* φ Herculis	4.2	16	5	21.796	+ 1.8814	+ 45	13	5.59	— 9.576
Groombridge 2320	5.5	16	6	1.464	0.1408	+ 68	5	41.14	9.498
δ Ophiuchi	2.8	16	8	41.142	3.1399	— 3	24	57.15	9.505
* σ Coronæ Borealis (*mean*)	5.3	16	10	37.982	2.2448	+ 34	7	57.64	9.250
τ Herculis	3.9	16	16	29.690	1.8012	+ 46	34	14.05	8.729
* γ Apodis	4.0	16	16	54.352	+ 9.0722	— 78	39	12.63	— 8.720
* η Ursæ Minoris	5.0	16	20	39.844	— 1.8135	+ 76	0	14.64	8 168
η Draconis	2.8	16	22	31.868	+ 0.8068	+ 61	45	31.24	8.219
α Scorpii (*Antares*)	1.2	16	22	47.108	3.6707	— 26	11	30.81	8.291
β Herculis	2.8	16	25	34.631	+ 2.5776	+ 21	43	30.89	8.049
A Draconis	5.0	16	28	11.907	— 0.1339	+ 69	0	5.73	— 7.799
ζ Ophiuchi	2.8	16	31	12.701	+ 3.2993	— 10	20	52.63	7.554
α Trianguli Australis	2.2	16	37	13.986	6.3059	— 68	49	41.95	7.135
η Herculis	3.7	16	39	11.572	2.0539	+ 39	7	40.24	7.015
α Camelopardalis S.P.	4.4	16	43	18.668	5.9267	+113	50	30.16	6.584
κ Ophiuchi	3.4	16	52	33.380	+ 2.8376	+ 9	32	35.90	— 5.822
ε Ursæ Minoris	4.5	16	57	2.957	— 6.3235	+ 82	12	51.27	5.442
d Herculis	5.3	16	57	37.107	+ 2.2114	+ 33	43	29.69	5.389
* η Ophiuchi	2.5	17	4	11.012	3.4357	— 15	35	26.90	4.757
α^1 Herculis (*var.*)	3.1	17	9	43.372	2.7336	+ 14	30	49.46	4.337
* π Herculis	3.4	17	11	17.151	+ 2.0892	+ 36	55	51.83	— 4.222
* θ Ophiuchi	3.3	17	15	22.581	3.6795	— 24	53	28.88	3.933
b Ophiuchi (*var.*)	4.4	17	19	46.459	3.6592	— 24	4	31.56	3.632
* δ Aræ	3.8	17	21	21.097	5.4023	— 60	35	35.44	3.506
Groombr. 966 S.P.	6.4	17	25	17.559	8.0025	+105	1	44.17	3.045
* Groombr. 944 S.P.	6.4	17	27	25.669	+ 18.6675	+ 94	51	31.70	— 2.853
β Draconis	3.0	17	27	59.578	1.3535	+ 52	22	52.82	2.792
α Ophiuchi	2.2	17	29	55.265	2.7830	+ 12	38	20.21	2.861
* ι Herculis	4.0	17	36	25.093	+ 1.6967	+ 46	3	50.06	2.061
ω Draconis	4.9	17	37	35.095	— 0.3535	+ 68	48	28.03	1.634
μ Herculis	3.5	17	42	13.931	+ 2.3465	+ 27	47	2.36	— 2.313
ψ^1 Draconis	4.8	17	43	51.520	— 1.0786	+ 72	12	5.84	1.684
* θ Herculis	3.9	17	52	32.919	+ 2.0552	+ 37	15	54.18	0.633
γ Draconis	2.5	17	54	5.897	1.3916	+ 51	30	5.87	0.546
γ^2 Sagittarii	2.9	17	58	52.190	3.8516	— 30	25	29.74	— 0.318
* θ Herculis	3.9	18	3	19.785	+ 2.3394	+ 28	44	52.16	+ 0.294
22 Camelop. (H.) S.P.	4.7	18	6	56.438	+ 6.6171	+110	38	35.86	0.725
δ Ursæ Minoris	4.4	18	7	8.703	— 19.4715	+ 86	36	43.17	0.676
μ^1 Sagittarii	4.1	18	7	18.271	+ 3.5866	— 21	5	11.70	0.627
η Serpentis	3.5	18	15	43.280	3.1024	— 2	55	34.26	0.700
* λ Sagittarii	2.9	18	21	18.324	+ 3.7026	— 25	28	51.97	+ 1.638
* χ Draconis	5.3	18	23	0.176	— 1.0798	+ 72	41	8.74	1.634
1 Aquilæ	4.0	18	29	19.801	+ 3.2645	— 8	19	9.39	2.229
* ζ Pavonis	4.2	18	30	24.737	7.0282	— 71	31	8.38	2.512
α Lyræ (*Vega*)	0.2	18	33	16.928	2.0314	+ 38	40	59.70	3.175
σ Octantis	5.6	18	45	54.401	+105.3440	— 89	15	53.51	+ 3.972
β Lyræ (*var.*)	3.6	18	46	5.565	2.2143	+ 33	14	14.56	3.988
σ Sagittarii	2.3	18	48	34.112	3.7215	— 26	25	49.40	4.140
51 Cephei (H.) S.P.	5.3	18	49	45.027	+ 29.8425	+ 92	47	3.56	4.357
50 Draconis	5.6	18	49	51.240	— 1.9094	+ 75	18	22.91	+ 4.403

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1892.0. (January 0$^{\mathrm{d}}$.165, Washington.)

Name of Star.		Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
			h	m	s	s	°	′	″	″
* γ Lyræ		3.3	18	54	54.235	+ 2.2444	+ 32	32	29.99	+ 4.769
ζ Aquilæ		3.1	19	0	26.779	2.7569	+ 13	42	11.57	5.124
* ι Lyræ		5.2	19	3	26.908	2.1412	+ 35	55	51.93	5.490
* 25 Camelopardalis	S.P.	5.3	19	8	20.554	12.9463	+ 97	22	55.38	5.923
d Sagittarii		5.0	19	11	18.950	3.5121	− 19	8	40.72	6.121
δ Draconis		3.1	19	12	31.797	+ 0.0289	+ 67	28	17.59	+ 6.326
* θ Lyræ		4.4	19	12	37.108	+ 2.0790	+ 37	56	29.22	6.249
τ Draconis		4.5	19	17	37.785	− 1.1185	+ 73	9	17.40	6.771
Piazzi vii. 67	S.P.	5.7	19	19	38.583	+ 6.2965	+111	18	52.39	6.867
δ Aquilæ		3.5	19	20	3.179	3.0252	+ 2	53	59.17	6.939
* β Cygni		3.1	19	26	21.962	+ 2.4194	+ 27	43	58.92	+ 7.371
κ Aquilæ		5.0	19	31	4.862	+ 3.2288	− 7	16	1.75	7.761
λ Ursæ Minoris		6.5	19	31	24.511	−65.5990	+ 88	58	16.32	7.796
* β Sagittæ		4.5	19	36	11.907	+ 2.6955	+ 17	13	33.38	8.144
γ Aquilæ		2.8	19	41	7.514	2.8522	+ 10	21	1.20	8.555
* δ Cygni		2.9	19	41	36.001	+ 1.8761	+ 44	52	2.00	+ 8.637
α Aquilæ (*Altair*)		0.9	19	45	30.842	2.9275	+ 8	34	59.96	9.280
* Groomb. 1374	S.P.	5.6	19	47	15.562	7.2812	+105	47	40.38	9.080
* ε Pavonis		4.1	19	48	5.314	+ 7.0154	− 73	11	37.98	9.110
ε Draconis		3.9	19	48	32.095	− 0.1804	+ 69	59	34.36	9.173
β Aquilæ		3.9	19	50	0.496	+ 2.9470	+ 6	8	13.99	+ 8.769
* γ Sagittæ		3.6	19	53	57.258	2.6678	+ 19	11	56.88	9.603
* c Sagittarii		4.5	19	56	1.054	3.6965	− 28	0	34.39	9.739
τ Aquilæ		5.7	19	58	51.896	2.9330	+ 6	58	24.15	9.947
3 Ursæ Majoris (H.)	S.P.	5.5	20	2	3.926	6.0459	+111	12	31.77	10.180
* θ Aquilæ		3.3	20	5	43.915	+ 3.0971	− 1	8	29.78	+ 10.467
* 31 Cygni		3.9	20	10	13.864	1.8893	+ 46	24	49.91	10.794
α^2 Capricorni		3.7	20	12	3.746	+ 3.3319	− 12	52	45.27	10.926
κ Cephei (*pr.*)		4.4	20	12	31.106	− 1.9274	+ 77	23	9.57	10.988
α Pavonis		2.1	20	17	6.547	+ 4.7826	− 57	4	49.51	11.203
γ Cygni		2.3	20	18	21.244	+ 2.1538	+ 39	54	39.85	+ 11.376
π Capricorni		5.1	20	21	8.391	3.4393	− 18	33	55.62	11.566
ε Delphini		4.0	20	28	3.226	+ 2.8671	+ 10	56	11.53	12.049
Groombridge 3241		6.5	20	30	28.219	− 0.2216	+ 72	9	56.78	12.220
* α Delphini		3.9	20	34	37.302	+ 2.7878	+ 15	31	52.40	12.528
* β Pavonis		3.4	20	35	13.397	+ 5.4711	− 66	35	25.62	+ 12.544
α Cygni		1.4	20	37	45.028	2.0445	+ 44	53	40.05	12.730
* ψ Capricorni		4.3	20	39	42.067	3.5604	− 25	39	31.16	12.707
* ε Cygni		2.6	20	41	50.494	2.4278	+ 33	33	56.74	13.346
μ Aquarii		4.8	20	46	49.734	+ 3.2396	− 9	23	18.07	13.298
12 Year Catalogue, 1879		5.3	20	52	28.543	− 2.5572	+ 80	8	49.20	+ 13.676
ν Cygni		4.1	20	53	8.803	+ 2.2343	+ 40	45	5.29	13.731
σ^2 Ursæ Majoris	S.P.	5.0	21	0	53.218	5.3514	+112	25	38.81	14.289
61^1 Cygni		5.4	21	2	3.329	2.6833	+ 38	13	6.20	17.539
ζ Cygni		3.3	21	8	20.345	2.5497	+ 29	47	2.38	14.617
* τ Cygni		3.8	21	10	28.816	+ 2.3936	+ 37	35	4.28	+ 15.269
α Cephei		2.6	21	16	0.129	1.4364	+ 62	7	40.81	15.177
1 Pegasi		4.3	21	17	5.477	2.7723	+ 19	20	33.19	15.247
* ζ Capricorni		3.8	21	20	30.094	3.4340	− 22	52	44.23	15.392
1 Draconis (H.)	S.P.	4.5	21	21	39.740	+ 8.9791	+ 98	11	49.00	+ 15.473

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1892.0. (January 0d.165, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
d Ursæ Majoris . S.P.	4.8	21 24 55.520	+ 5.3966	+109 41 43.82	+ 15.574
β Aquarii . . .	2.9	21 25 52.423	3.1616	− 6 2 46.09	15.670
β Cephei (*pr.*) . .	3.4	21 27 15.892	0.7932	+ 70 5 11.59	15.758
ξ Aquarii . . .	4.8	21 32 0.187	3.1977	− 8 20 18.13	15.979
* 74 Cygni . . .	5.0	21 32 37.214	2.4017	+ 39 55 41.76	16.057
* λ^1 Octantis . . .	5.4	21 34 17.810	+ 9.7596	− 83 12 54.05	+ 16.056
* ζ Chamæleontis . S.P.	5.2	21 37 3.242	− 1.5698	− 99 32 38.45	16.283
ε Pegasi . . .	2.4	21 38 52.918	+ 2.9467	+ 9 22 47.99	16.363
11 Cephei . . .	4.8	21 40 20.434	0.9005	+ 70 48 51.13	16.541
* π^2 Cygni . . .	4.5	21 42 48.207	2.2134	+ 48 48 35.84	16.548
μ Capricorni . .	5.2	21 47 24.480	+ 3.2757	− 14 3 36.01	+ 16.787
* 16 Pegasi . . .	5.1	21 48 8.876	2.7280	+ 25 25 1.57	16.825
79 Draconis . . .	6.6	21 51 31.093	0.7280	+ 73 11 29.08	17.015
α Aquarii . . .	3.0	22 0 14.213	3.0826	− 0 50 39.83	17.363
α Gruis . . .	1.9	22 1 25.502	3.8049	− 47 29 1.20	17.256
* π Pegasi . . .	4.3	22 5 11.456	+ 2.6603	+ 32 38 54.52	+ 17.586
32 Ursæ Majoris . S.P.	5.7	22 10 11.284	4.4178	+114 21 11.92	17.819
* υ Octantis . . .	6.2	22 10 51.182	13.0892	− 86 30 56.35	17.909
θ Aquarii . . .	4.4	22 11 8.089	3.1689	− 8 19 15.36	17.808
* γ Aquarii . . .	4.0	22 16 4.663	3.1007	− 1 55 53.26	18.045
π Aquarii . . .	4.6	22 19 45.707	+ 3.0646	+ 0 49 46.10	+ 18.160
* σ Aquarii . . .	4.9	22 24 55.872	3.1780	− 11 13 49.66	18.324
9 Draconis . . S.P.	5.0	22 25 54.782	5.2559	+103 43 51.69	18.403
* α Lacertæ . . .	3.9	22 26 50.498	2.4626	+ 49 43 38.02	18.419
η Aquarii . . .	4.2	22 29 48.399	3.0836	− 0 40 26.58	18.463
226 Cephei (B.) . .	5.7	22 30 22.690	+ 1.0766	+ 75 40 11.42	+ 18.530
* 10 Lacertæ . . .	5.0	22 34 24.909	2.6869	+ 38 29 17.59	18.673
* β Octantis . . .	4.4	22 34 59.434	6.4680	− 81 56 49.95	18.690
ζ Pegasi . . .	3.5	22 36 4.548	2.9910	+ 10 16 3.63	18.710
* λ Pegasi . . .	4.1	22 41 19.728	2.8854	+ 22 59 50.57	18.878
ι Cephei . . .	3.6	22 45 50.046	+ 2.1224	+ 65 37 56.40	+ 18.879
λ Aquarii . . .	3.8	22 46 58.836	3.1326	− 8 9 14.95	19.079
* Groombr. 1706 . S.P.	6.3	22 51 18.273	4.9617	+101 39 4.90	19.187
α Pis. Aus. (*Fomalhaut*)	1.3	22 51 40.931	3.3243	− 30 11 40.32	18.997
* ο Andromedæ . .	3.8	22 56 57.096	2.7503	+ 41 44 43.58	19.290
α Ursæ Majoris . S.P.	2.0	22 57 3.633	+ 3.7453	+117 39 57.74	+ 19.368
α Pegasi (*Markab*) .	2.5	22 59 22.865	2.9851	+ 14 37 27.04	19.305
* φ Aquarii . . .	4.3	23 8 43.776	3.1087	− 6 37 51.96	19.361
ο Cephei . . .	5.1	23 14 11.556	2.4451	+ 67 31 14.57	19.671
* τ Pegasi . . .	4.6	23 15 17.471	2.9638	+ 23 8 56.68	19.658
θ Piscium . . .	4.3	23 22 29.364	+ 3.0412	+ 5 47 8.31	+ 19.729
λ Draconis . . S.P.	4.0	23 24 59.237	3.6186	+110 4 22.54	19.840
* λ Andromedæ . .	3.8	23 32 16.711	2.9229	+ 45 52 21.93	19.473
ι Piscium . . .	4.3	23 34 23.723	3.0842	+ 5 2 27.36	19.485
γ Cephei . . .	3.5	23 34 54.798	2.4174	+ 77 1 46.12	20.076
* i^1 Aquarii . . .	5.2	23 38 36.034	+ 3.1167	− 18 52 34.53	+ 19.960
* δ Sculptoris . .	4.6	23 43 18.042	3.1321	− 28 43 38.20	19.857
* γ^1 Octantis . . .	5.2	23 45 44.734	3.6814	− 82 37 8.60	19.994
Groombridge 4163 .	6.6	23 49 34.943	2.8675	+ 73 48 33.41	20.023
ω Piscium . . .	4.2	23 53 45.928	3.0785	+ 6 15 55.29	19.931
* 33 Piscium . . .	4.7	23 59 48.453	+ 3.0708	− 6 18 41.85	+ 20.148

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Jan.	h m 1 18	° ′ +88 44	Jan.	h m 6 50	° ′ +87 13	Jan.	h m 18 6	° ′ +86 36	Jan.	h m 19 30	° ′ +88 58
	s	″		s	″		s	″		s	″
0.3	69.37	12.9	0.5	6.64	1.2	0.9	50.82	35.1	1.0	20.61	14.3
1.3	68.34	13.0	1.5	6.80	1.6	1.9	50.80	34.7	2.0	20.04	14.0
2.3	67.28	13.2	2.5	6.91	1.9	2.9	50.81	34.3	3.0	19.56	13.6
3.3	66.20	13.3	3.5	7.00	2.3	3.9	50.85	34.0	4.0	19.15	13.2
4.3	65.13	13.4	4.5	7.07	2.7	4.9	50.88	33.6	5.0	18.80	12.9
5.3	64.11	13.4	5.5	7.11	3.0	5.9	50.93	33.3	6.0	18.52	12.5
6.3	63.13	13.5	6.5	7.13	3.3	6.9	50.99	32.9	7.0	18.25	12.2
7.3	62.21	13.5	7.5	7.16	3.6	7.9	51.04	32.6	8.0	17.99	11.9
8.3	61.32	13.6	8.5	7.20	3.9	8.9	51.09	32.3	9.0	17.70	11.6
9.3	60.46	13.7	9.5	7.26	4.2	9.9	51.13	32.0	10.0	17.40	11.3
10.2	59.59	13.7	10.5	7.33	4.5	10.9	51.15	31.7	11.0	17.06	11.0
11.2	58.71	13.8	11.5	7.41	4.8	11.9	51.19	31.4	12.0	16.70	10.7
12.2	57.78	13.9	12.5	7.49	5.1	12.9	51.22	31.0	13.0	16.35	10.4
13.2	56.79	14.0	13.5	7.55	5.4	13.9	51.28	30.7	13.9	16.02	10.1
14.2	55.75	14.1	14.5	7.62	5.8	14.9	51.35	30.3	14.9	15.75	9.7
15.2	54.67	14.1	15.5	7.62	6.2	15.9	51.44	29.9	15.9	15.54	9.4
16.2	53.55	14.1	16.5	7.61	6.5	16.9	51.57	29.6	16.9	15.44	9.0
17.2	52.43	14.1	17.5	7.54	6.9	17.9	51.71	29.2	17.9	15.41	8.6
18.2	51.34	14.1	18.5	7.48	7.2	18.9	51.86	28.9	18.9	15.46	8.3
19.2	50.30	14.1	19.5	7.37	7.6	19.9	52.03	28.6	19.9	15.55	7.9
20.2	49.30	14.1	20.4	7.26	7.9	20.9	52.20	28.3	20.9	15.66	7.6
21.2	48.37	14.0	21.4	7.15	8.2	21.9	52.36	28.0	21.9	15.78	7.3
22.2	47.48	14.0	22.4	7.05	8.5	22.9	52.52	27.7	22.9	15.85	7.0
23.2	46.61	13.9	23.4	6.97	8.7	23.9	52.65	27.5	23.9	15.91	6.7
24.2	45.72	13.9	24.4	6.92	9.0	24.9	52.79	27.2	24.9	15.91	6.4
25.2	44.84	13.9	25.4	6.86	9.3	25.9	52.92	26.9	25.9	15.88	6.1
26.2	43.90	13.9	26.4	6.83	9.6	26.9	53.05	26.6	26.9	15.87	5.8
27.2	42.93	13.9	27.4	6.76	9.9	27.9	53.20	26.2	27.9	15.89	5.4
28.2	41.90	13.9	28.4	6.68	10.3	28.9	53.37	25.9	28.9	15.94	5.1
29.2	40.84	13.8	29.4	6.57	10.6	29.9	53.55	25.6	29.9	16.09	4.7
30.2	39.76	13.8	30.4	6.43	11.0	30.9	53.77	25.3	30.9	16.30	4.3
31.2	38.69	13.7	31.4	6.27	11.3	31.9	54.00	24.9	31.9	16.60	4.0

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris (*Polaris*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
Feb.	1 18	+88 44	Feb.	6 49	+87 13	Feb.	18 6	+86 36	Feb.	19 30	+88 57
	s	″		s	″		s	″		s	″
1.2	37.67	13.6	1.4	66.06	11.6	1.9	54.24	24.6	1.9	16.96	63.7
2.2	36.69	13.4	2.4	65.85	11.9	2.9	54.47	24.4	2.9	17.36	63.3
3.2	35.79	13.3	3.4	65.64	12.2	3.9	54.71	24.2	3.9	17.76	63.0
4.2	34.94	13.2	4.4	65.43	12.4	4.9	54.95	23.9	4.9	18.16	62.8
5.2	34.12	13.1	5.4	65.24	12.7	5.9	55.16	23.7	5.9	18.50	62.5
6.2	33.33	13.0	6.4	65.05	12.9	6.9	55.37	23.5	6.9	18.84	62.2
7.2	32.53	12.9	7.4	64.89	13.2	7.9	55.58	23.2	7.9	19.14	61.9
8.2	31.72	12.8	8.4	64.74	13.4	8.9	55.79	23.0	8.9	19.42	61.6
9.2	30.85	12.7	9.4	64.58	13.7	9.9	56.00	22.7	9.9	19.72	61.3
10.2	29.93	12.6	10.4	64.40	14.0	10.9	56.24	22.4	10.9	20.07	61.0
11.2	28.98	12.5	11.4	64.21	14.3	11.9	56.49	22.2	11.9	20.47	60.7
12.2	28.00	12.3	12.4	63.96	14.6	12.9	56.78	21.9	12.9	20.99	60.3
13.2	27.01	12.2	13.4	63.70	14.9	13.9	57.08	21.6	13.9	21.56	60.0
14.2	26.06	12.0	14.4	63.40	15.2	14.9	57.40	21.4	14.9	22.22	59.7
15.1	25.14	11.8	15.4	63.08	15.4	15.9	57.72	21.2	15.9	22.92	59.4
16.1	24.30	11.6	16.4	62.75	15.7	16.8	58.03	21.0	16.9	23.68	59.1
17.1	23.52	11.4	17.4	62.42	15.9	17.8	58.35	20.8	17.9	24.40	58.9
18.1	22.79	11.2	18.4	62.10	16.1	18.8	58.66	20.7	18.9	25.13	58.6
19.1	22.12	11.0	19.4	61.80	16.3	19.8	58.96	20.5	19.9	25.80	58.4
20.1	21.45	10.8	20.4	61.51	16.5	20.8	59.24	20.4	20.9	26.44	58.2
21.1	20.77	10.6	21.4	61.25	16.7	21.8	59.53	20.2	21.9	27.04	57.9
22.1	20.09	10.4	22.4	60.99	16.9	22.8	59.79	20.0	22.9	27.62	57.7
23.1	19.36	10.2	23.4	60.74	17.1	23.8	60.07	19.8	23.9	28.20	57.4
24.1	18.59	10.1	24.3	60.46	17.4	24.8	60.37	19.6	24.9	28.84	57.2
25.1	17.80	9.9	25.3	60.17	17.6	25.8	60.67	19.4	25.9	29.52	56.9
26.1	16.99	9.7	26.3	59.85	17.8	26.8	61.01	19.2	26.9	30.29	56.6
27.1	16.18	9.5	27.3	59.49	18.1	27.8	61.36	19.0	27.9	31.11	56.3
28.1	15.43	9.2	28.3	59.11	18.3	28.8	61.72	18.9	28.9	32.01	56.1
29.1	14.72	8.9	29.3	58.73	18.5	29.8	62.07	18.8	29.9	32.95	55.8

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Mar.	h m 1 18	+88° 44′	Mar.	h m 6 49	+87° 13′	Mar.	h m 18 7	+86° 36′	Mar.	h m 19 30	+88° 57′
	s	″		s	″		s	″		s	″
1.1	14.08	8.7	1.3	58.33	18.6	1.8	2.42	18.6	1.9	33.91	55.6
2.1	13.52	8.4	2.3	57.94	18.8	2.8	2.77	18.6	2.9	34.84	55.4
3.1	13.02	8.2	3.3	57.57	18.9	3.8	3.11	18.5	3.9	35.74	55.2
4.1	12.55	7.9	4.3	57.21	19.1	4.8	3.43	18.4	4.9	36.59	55.1
5.1	12.09	7.7	5.3	56.87	19.2	5.8	3.74	18.3	5.9	37.43	54.9
6.1	11.63	7.4	6.3	56.55	19.3	6.8	4.05	18.2	6.9	38.21	54.7
7.1	11.13	7.2	7.3	56.23	19.4	7.8	4.36	18.1	7.9	39.00	54.5
8.1	10.60	7.0	8.3	55.90	19.6	8.8	4.68	18.0	8.9	39.82	54.3
9.1	10.02	6.8	9.3	55.56	19.8	9.8	5.02	17.9	9.8	40.69	54.1
10.1	9.42	6.5	10.3	55.18	19.9	10.8	5.38	17.8	10.8	41.63	53.9
11.1	8.81	6.3	11.3	54.79	20.1	11.8	5.75	17.7	11.8	42.63	53.7
12.1	8.23	6.0	12.3	54.35	20.3	12.8	6.15	17.6	12.8	43.72	53.5
13.1	7.69	5.7	13.3	53.91	20.4	13.8	6.53	17.5	13.8	44.84	53.3
14.1	7.22	5.3	14.3	53.44	20.5	14.8	6.93	17.5	14.8	46.03	53.1
15.1	6.81	5.0	15.3	52.98	20.6	15.8	7.32	17.5	15.8	47.18	53.0
16.1	6.47	4.7	16.3	52.53	20.6	16.8	7.69	17.5	16.8	48.33	52.9
17.1	6.20	4.4	17.3	52.10	20.7	17.8	8.04	17.5	17.8	49.41	52.8
18.1	5.94	4.1	18.3	51.70	20.7	18.8	8.39	17.5	18.8	50.45	52.7
19.1	5.70	3.8	19.3	51.32	20.8	19.8	8.72	17.5	19.8	51.45	52.6
20.1	5.46	3.5	20.3	50.95	20.8	20.8	9.05	17.5	20.8	52.40	52.5
21.1	5.20	3.3	21.3	50.59	20.9	21.8	9.36	17.5	21.8	53.34	52.4
22.0	4.88	3.0	22.3	50.23	21.0	22.7	9.71	17.5	22.8	54.30	52.3
23.0	4.55	2.8	23.3	49.85	21.1	23.7	10.04	17.4	23.8	55.29	52.1
24.0	4.20	2.5	24.3	49.46	21.1	24.7	10.41	17.4	24.8	56.35	52.0
25.0	3.84	2.2	25.3	49.03	21.2	25.7	10.78	17.4	25.8	57.46	51.9
26.0	3.52	1.9	26.3	48.59	21.3	26.7	11.16	17.4	26.8	58.63	51.8
27.0	3.27	1.5	27.3	48.13	21.3	27.7	11.54	17.4	27.8	59.84	51.7
28.0	3.06	1.2	28.3	47.66	21.4	28.7	11.93	17.5	28.8	61.08	51.6
29.0	2.96	0.9	29.3	47.20	21.3	29.7	12.28	17.6	29.8	62.29	51.6
30.0	2.91	0.6	30.3	46.75	21.3	30.7	12.65	17.7	30.8	63.47	51.5
31.0	2.90	0.3	31.3	46.35	21.3	31.7	12.98	17.8	31.8	64.59	51.5
32.0	2.92	0.0	32.2	45.95	21.3	32.7	13.31	17.9	32.8	65.66	51.5

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Apr.	h m 1 18	° ′ +88 43	Apr.	h m 6 49	° ′ +87 13	Apr.	h m 18 7	° ′ +86 36	Apr.	h m 19 31	° ′ +88 57
	s	″		s	″		s	″		s	″
1.0	2.92	60.0	1.2	45.95	21.3	1.7	13.31	17.9	1.8	5.66	51.5
2.0	2.95	59.7	2.2	45.58	21.2	2.7	13.60	17.9	2.8	6.68	51.5
3.0	2.96	59.4	3.2	45.22	21.2	3.7	13.90	18.0	3.8	7.68	51.5
4.0	2.92	59.1	4.2	44.87	21.2	4.7	14.21	18.1	4.8	8.67	51.4
5.0	2.86	58.9	5.2	44.50	21.2	5.7	14.53	18.1	5.8	9.69	51.4
6.0	2.77	58.6	6.2	44.12	21.2	6.7	14.86	18.2	6.8	10.78	51.3
7.0	2.65	58.3	7.2	43.69	21.2	7.7	15.21	18.2	7.8	11.91	51.3
8.0	2.56	58.0	8.2	43.27	21.2	8.7	15.57	18.3	8.8	13.12	51.2
9.0	2.50	57.7	9.2	42.81	21.1	9.7	15.94	18.4	9.8	14.36	51.2
10.0	2.50	57.3	10.2	42.35	21.1	10.7	16.31	18.6	10.8	15.65	51.2
10.9	2.59	56.9	11.2	41.89	21.0	11.7	16.67	18.7	11.8	16.94	51.2
11.9	2.73	56.6	12.2	41.42	20.9	12.7	17.01	18.8	12.8	18.18	51.3
12.9	2.92	56.3	13.2	40.99	20.8	13.7	17.33	19.0	13.8	19.39	51.3
13.9	3.18	56.0	14.2	40.59	20.7	14.7	17.63	19.2	14.8	20.52	51.4
14.9	3.44	55.7	15.2	40.21	20.6	15.7	17.92	19.4	15.8	21.58	51.5
15.9	3.71	55.4	16.2	39.87	20.5	16.7	18.20	19.5	16.8	22.61	51.5
16.9	3.95	55.1	17.2	39 53	20.4	17.7	18.47	19.7	17.7	23.59	51.6
17.9	4.16	54.8	18.2	39.20	20.3	18.7	18.74	19.8	18.7	24.54	51.6
18.9	4.33	54.6	19.2	38.86	20.2	19.7	19.01	20.0	19.7	25.56	51.7
19.9	4.48	54.3	20.2	38.50	20.1	20.7	19.29	20.1	20.7	26.59	51.7
20.9	4.64	54.1	21.2	38.15	20.0	21.7	19.60	20.2	21.7	27.68	51.7
21.9	4.80	53.8	22.2	37.75	20.0	22.7	19.91	20.4	22.7	28.81	51.8
22.9	5.02	53.5	23.2	37.35	19.8	23.7	20.21	20.6	23.7	29.98	51.9
23.9	5.30	53.1	24.2	36.95	19.7	24.7	20.52	20.8	24.7	31.15	51.9
24.9	5.65	52.8	25.2	36.56	19.6	25.7	20.79	21.0	25.7	32.32	52.1
25.9	6.06	52.5	26.2	36.17	19.4	26.7	21.08	21.2	26.7	33.44	52.2
26.9	6.54	52.2	27.2	35.83	19.2	27.7	21.33	21.5	27.7	34.51	52.3
27.9	7.05	52.0	28.2	35.48	19.0	28.6	21.56	21.7	28.7	35.51	52.5
28.9	7.56	51.7	29.2	35.19	18.8	29.6	21.78	22 0	29.7	36.43	52.6
29.9	8.07	51.5	30.2	34.91	18.6	30.6	21.98	22.2	30.7	37.35	52.8
30.9	8.55	51.3	31.2	34.64	18.5	31.6	22.20	22.4	31.7	38.22	52.9
31.9	8.97	51.1									

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
May	1 18	+88 43	May	6 49	+87 13	May	18 7	+86 36	May	19 31	+88 57
	s	″		s	″		s	″		s	″
1.9	8.97	51.1	1.2	34.64	18.5	1.6	22.20	22.4	1.7	38.22	52.9
2.9	9.37	50.8	2.2	34.36	18.3	2.6	22.40	22.6	2.7	39.08	53.0
3.9	9.73	50.6	3.2	34.08	18.2	3.6	22.63	22.8	3.7	39.99	53.1
4.9	10.10	50.3	4.2	33.77	18.0	4.6	22.87	23.0	4.6	40.95	53.2
5.9	10.49	50.1	5.2	33.45	17.9	5.6	23.12	23.2	5.6	41.96	53.4
6 9	10.93	49.8	6.2	33.10	17.7	6.6	23.37	23.4	6.6	43.01	53.5
7.9	11.43	49.5	7.1	32.76	17.5	7.6	23.62	23.6	7.6	44.10	53.6
8.9	12.00	49.2	8.1	32.40	17.3	8.6	23.87	23.9	8.6	45.18	53.8
9.9	12.64	49.0	9.1	32.05	17.1	9.6	24.10	24.2	9.6	46.24	54.0
10.9	13.33	48.7	10.1	31.73	16.9	10.6	24.30	24.5	10.6	47.24	54.2
11.9	14.04	48.5	11.1	31.44	16.6	11.6	24.49	24.8	11.6	48.18	54.4
12.9	14.73	48.3	12.1	31.17	16.4	12.6	24.66	25.1	12.6	49.05	54.6
13.9	15.44	48.1	13.1	30.95	16.1	13.6	24.82	25.4	13.6	49.84	54.8
14.9	16.09	47.9	14.1	30.74	15.9	14.6	24.95	25.6	14.6	50.56	55.1
15.9	16.70	47.7	15.1	30.55	15.6	15.6	25.09	25.9	15.6	51.28	55.3
16.9	17.27	47.6	16.1	30.37	15.4	16.6	25.23	26.1	16.6	51.98	55.4
17.9	17.85	47.4	17.1	30.17	15.2	17.6	25.36	26.4	17.6	52.72	55.6
18.9	18.42	47.2	18.1	29.95	15.0	18.6	25.52	26.6	18.6	53.49	55.8
19.9	19.01	47.0	19.1	29.71	14.8	19.6	25.70	26.9	19.6	54.30	56.0
20.9	19.68	46.7	20.1	29.46	14.6	20.6	25.86	27.1	20.6	55.13	56.2
21.9	20.38	46.5	21.1	29.21	14.4	21.6	26.01	27.4	21.6	55.99	56.4
22.9	21.16	46.3	22.1	28.96	14.1	22.6	26.17	27.7	22.6	56.83	56.6
23.9	22.00	46.1	23.1	28.73	13.8	23.6	26.29	28.1	23.6	57.64	56.9
24.9	22.86	46.0	24.1	28.51	13.5	24.6	26.41	28.4	24.6	58.38	57.1
25.9	23.75	45.8	25.1	28.35	13.3	25.6	26.49	28.7	25.6	59.05	57.4
26.9	24.64	45.7	26.1	28.19	13.0	26.6	26.56	29.1	26.6	59.65	57.7
27.9	25.47	45.6	27.1	28.08	12.7	27.6	26.62	29.4	27.6	60.20	58.0
28.9	26.28	45.5	28.1	27.97	12.4	28.6	26.67	29.7	28.6	60.69	58.3
29.9	27.03	45.3	29.1	27.88	12.1	29.6	26.72	29.9	29.6	61.18	58.5
30.9	27.75	45.2	30.1	27.79	11.9	30.6	26.78	30.2	30.6	61.68	58.7
31.9	28.45	45.1	31.1	27.67	11.6	31.6	26.85	30.5	31.6	62.21	59.0
32.9	29.17	44.9	32.1	27.53	11.4	32.6	26.94	30.8	32.6	62.80	59.2

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
June	h m 1 18	° ′ +88 43	June	h m 6 49	° ′ +87 13	June	h m 18 7	° ′ +86 36	June	h m 19 32	° ′ +88 57
	s	″		s	″		s	″		s	″
1.9	29.17	44.9	1.1	27.53	11.4	1.6	26.94	30.8	1.6	2.80	59.2
2.9	29.90	44.8	2.1	27.38	11.1	2.6	27.02	31.0	2.6	3.43	59.4
3.8	30.70	44.6	3.1	27.22	10.9	3.5	27.11	31.3	3.6	4.08	59.7
4.8	31.54	44.5	4.1	27.05	10.6	4.5	27.19	31.7	4.6	4.75	60.0
5.8	32.47	44.3	5.1	26.89	10.3	5.5	27.26	32.0	5.6	5.40	60.2
6.8	33.43	44.2	6.1	26.75	10.0	6.5	27.32	32.3	6.6	5.98	60.6
7.8	34.42	44.1	7.1	26.65	9.6	7.5	27.34	32.7	7.6	6.52	60.9
8.8	35.41	44.0	8.1	26.56	9.3	8.5	27.35	33.0	8.6	6.96	61.2
9.8	36.39	43.9	9.1	26.51	9.0	9.5	27.33	33.4	9.6	7.33	61.5
10.8	37.32	43.9	10.1	26.50	8.7	10.5	27.31	33.7	10.6	7.62	61.8
11.8	38.22	43.8	11.1	26.49	8.4	11.5	27.27	34.0	11.6	7.86	62.1
12.8	39.07	43.8	12.1	26.50	8.1	12.5	27.23	34.3	12.6	8.09	62.4
13.8	39.88	43.7	13.0	26.50	7.8	13.5	27.21	34.6	13.6	8.33	62.7
14.8	40.68	43.7	14.0	26.48	7.5	14.5	27.19	34.8	14.6	8.61	62.9
15.8	41.51	43.6	15.0	26.45	7.3	15.5	27.17	35.1	15.6	8.92	63.2
16.8	42.36	43.6	16.0	26.41	7.0	16.5	27.16	35.4	16.6	9.27	63.5
17.8	43.27	43.5	17.0	26.36	6.7	17.5	27.15	35.7	17.6	9.62	63.7
18.8	44.25	43.4	18.0	26.31	6.4	18.5	27.13	36.1	18.6	9.97	64.0
19.8	45.27	43.4	19.0	26.29	6.1	19.5	27.10	36.4	19.6	10.29	64.4
20.8	46.33	43.3	20.0	26.28	5.8	20.5	27.05	36.8	20.6	10.57	64.7
21.8	47.43	43.3	21.0	26.30	5.4	21.5	26.98	37.1	21.6	10.75	65.1
22.8	48.51	43.3	22.0	26.35	5.1	22.5	26.88	37.5	22.6	10.88	65.4
23.8	49.55	43.3	23.0	26.44	4.7	23.5	26.77	37.8	23.6	10.93	65.8
24.8	50.55	43.3	24.0	26.54	4.4	24.5	26.64	38.1	24.6	10.92	66.1
25.8	51.50	43.4	25.0	26.65	4.1	25.5	26.52	38.4	25.6	10.88	66.4
26.8	52.39	43.4	26.0	26.77	3.8	26.5	26.40	38.7	26.6	10.85	66.8
27.8	53.26	43.4	27.0	26.88	3.5	27.5	26.29	39.0	27.6	10.84	67.1
28.8	54.12	43.4	28.0	26.96	3.3	28.5	26.19	39.2	28.6	10.87	67.3
29.8	54.98	43.4	29.0	27.02	3.0	29.5	26.10	39.5	29.5	10.95	67.6
30.8	55.88	43.4	30.0	27.06	2.7	30.5	26.02	39.8	30.5	11.05	67.9
31.8	56.83	43.4	31.0	27.10	2.4	31.5	25.92	40.1	31.5	11.18	68.2

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
July	$1^{h}\ 18^{m}$	$+88^{\circ}\ 43'$	July	$6^{h}\ 49^{m}$	$+87^{\circ}\ 12'$	July	$18^{h}\ 7^{m}$	$+86^{\circ}\ 36'$	July	$19^{h}\ 32^{m}$	$+88^{\circ}\ 58'$
	s	″		s	″		s	″		s	″
1.8	56.83	43.4	1.0	27.10	62.4	1.5	25.92	40.1	1.5	11.18	8.2
2.8	57.85	43.4	2.0	27.14	62.1	2.5	25.82	40.4	2.5	11.30	8.6
3.8	58.92	43.4	3.0	27.20	61.8	3.5	25.70	40.8	3.5	11.36	8.9
4.8	60.00	43.4	3.9	27.28	61.4	4.5	25.56	41.1	4.5	11.38	9.3
5.8	61.11	43.5	4.9	27.40	61.1	5.5	25.41	41.5	5.5	11.30	9.6
6.8	62.18	43.6	5.9	27.55	60.7	6.5	25.24	41.8	6.5	11.15	10.0
7.8	63.21	43.7	6.9	27.73	60.4	7.5	25.04	42.1	7.5	10.92	10.3
8.8	64.20	43.8	7.9	27.92	60.1	8.5	24.83	42.4	8.5	10.64	10.7
9.8	65.14	43.9	8.9	28.14	59.8	9.5	24.62	42.6	9.5	10.33	11.0
10.7	66.03	44.0	9.9	28.34	59.5	10.5	24.42	42.9	10.5	10.02	11.3
11.7	66.89	44.1	10.9	28.55	59.2	11.5	24.24	43.1	11.5	9.73	11.6
12.7	67.75	44.2	11.9	28.74	59.0	12.4	24.05	43.4	12.5	9.48	11.9
13.7	68.64	44.2	12.9	28.91	58.7	13.4	23.87	43.6	13.5	9.25	12.2
14.7	69.55	44.3	13.9	29.07	58.4	14.4	23.71	43.9	14.5	9.06	12.5
15.7	70.53	44.4	14.9	29.23	58.1	15.4	23.52	44.2	15.5	8.86	12.8
16.7	71.55	44.5	15.9	29.38	57.8	16.4	23.31	44.5	16.5	8.64	13.1
17.7	72.62	44.6	16.9	29.57	57.5	17.4	23.10	44.8	17.5	8.38	13.5
18.7	73.72	44.7	17.9	29.78	57.2	18.4	22.88	45.1	18.5	8.05	13.9
19.7	74.79	44.9	18.9	30.02	56.8	19.4	22.63	45.5	19.5	7.64	14.2
20.7	75.86	45.0	19.9	30.29	56.5	20.4	22.35	45.7	20.5	7.16	14.6
21.7	76.85	45.2	20.9	30.60	56.2	21.4	22.06	46.0	21.5	6.62	14.9
22.7	77.82	45.4	21.9	30.90	55.9	22.4	21.78	46.3	22.5	6.02	15.3
23.7	78.71	45.6	22.9	31.22	55.6	23.4	21.50	46.5	23.5	5.44	15.6
24.7	79.55	45.7	23.9	31.53	55.4	24.4	21.23	46.7	24.5	4.86	15.9
25.7	80.37	45.9	24.9	31.82	55.1	25.4	20.96	46.9	25.5	4.33	16.2
26.7	81.20	46.0	25.9	32.09	54.9	26.4	20.73	47.2	26.5	3.82	16.4
27.7	82.03	46.2	26.9	32.34	54.6	27.4	20.48	47.4	27.5	3.39	16.7
28.7	82.92	46.3	27.9	32.58	54.4	28.4	20.25	47.6	28.5	2.95	17.0
29.7	83.84	46.4	28.9	32.81	54.1	29.4	20.00	47.9	29.5	2.53	17.3
30.7	84.85	46.6	29.9	33.05	53.8	30.4	19.75	48.1	30.5	2.08	17.7
31.7	85.85	46.8	30.9	33.32	53.5	31.4	19.48	48.4	31.5	1.57	18.0
32.7	86.87	46.9	31.9	33.61	53.2	32.4	19.16	48.7	32.5	1.00	18.4

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Aug.	h m 1 19	+88° 43′	Aug.	h m 6 49	+87° 12′	Aug.	h m 18 7	+86° 36′	Aug.	h m 19 31	+88° 58′
	s	″		s	″		s	″		s	″
1.7	26.87	46.9	1.9	33.94	52.9	1.4	19.16	48.7	1.5	61.00	18.4
2.7	27.88	47.2	2.9	34.28	52.6	2.4	18.86	48.9	2.4	60.34	18.7
3.7	28.85	47.4	3.9	34.67	52.3	3.4	18.51	49.2	3.4	59.62	19.0
4.7	29.75	47.6	4.9	35.05	52.1	4.4	18.19	49.4	4.4	58.82	19.4
5.7	30.61	47.9	5.9	35.45	51.8	5.4	17.83	49.6	5.4	57.97	19.7
6.7	31.41	48.1	6.9	35.83	51.6	6.4	17.49	49.8	6.4	57.14	19.9
7.7	32.17	48.3	7.9	36.20	51.4	7.4	17.15	50.0	7.4	56.32	20.2
8.7	32.91	48.6	8.9	36.56	51.2	8.4	16.82	50.1	8.4	55.53	20.5
9.7	33.67	48.8	9.9	36.88	51.0	9.4	16.50	50.3	9.4	54.78	20.7
10.7	34.44	49.0	10.9	37.21	50.8	10.4	16.20	50.5	10.4	54.05	21.0
11.7	35.26	49.2	11.9	37.55	50.5	11.4	15.88	50.7	11.4	53.35	21.3
12.7	36.14	49.4	12.9	37.90	50.3	12.4	15.55	50.9	12.4	52.63	21.6
13.7	37.06	49.6	13.9	38.26	50.0	13.4	15.23	51.1	13.4	51.90	21.9
14.7	37.99	49.9	14.9	38.67	49.7	14.4	14.88	51.3	14.4	51.10	22.2
15.6	38.93	50.1	15.9	39.10	49.5	15.4	14.51	51.6	15.4	50.22	22.5
16.6	39.84	50.4	16.9	39.55	49.2	16.3	14.13	51.8	16.4	49.26	22.8
17.6	40.70	50.7	17.9	40.01	49.0	17.3	13.72	52.0	17.4	48.25	23.1
18.6	41.50	51.0	18.9	40.49	48.8	18.3	13.31	52.1	18.4	47.20	23.4
19.6	42.24	51.4	19.9	40.96	48.6	19.3	12.91	52.3	19.4	46.11	23.7
20.6	42.93	51.7	20.9	41.43	48.4	20.3	12.52	52.4	20.4	45.05	23.9
21.6	43.56	51.9	21.9	41.84	48.2	21.3	12.14	52.5	21.4	44.01	24.2
22.6	44.20	52.2	22.9	42.27	48.1	22.3	11.77	52.6	22.4	43.03	24.4
23.6	44.84	52.5	23.9	42.65	47.9	23.3	11.43	52.7	23.4	42.09	24.6
24.6	45.51	52.7	24.8	43.04	47.7	24.3	11.07	52.9	24.4	41.20	24.8
25.6	46.23	53.0	25.8	43.43	47.5	25.3	10.73	53.0	25.4	40.30	25.1
26.6	46.99	53.2	26.8	43.82	47.3	26.3	10.37	53.2	26.4	39.41	25.3
27.6	47.79	53.5	27.8	44.24	47.1	27.3	10.01	53.3	27.4	38.49	25.6
28.6	48.58	53.8	28.8	44.69	46.9	28.3	9.62	53.5	28.4	37.49	25.9
29.6	49.37	54.1	29.8	45.18	46.6	29.3	9.20	53.7	29.4	36.43	26.2
30.6	50.14	54.4	30.8	45.69	46.4	30.3	8.78	53 8	30.4	35.27	26.4
31.6	50.83	54.8	31.8	46.21	46 3	31.3	8.33	53.9	31.4	34.07	26.7
32.6	51.47	55.1	32.8	46.74	46.1	32.3	7.91	54.0	32.4	32.82	26.9

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Sept.	h m 1 19	° ′ +88 43	Sept.	h m 6 49	° ′ +87 12	Sept.	h m 18 6	° ′ +86 36	Sept.	h m 19 30	° ′ +88 58
	s	″		s	″		s	″		s	″
1.6	51.47	55.1	1.8	46.74	46.1	1.3	67.91	54.0	1.4	92.82	26.9
2.6	52.05	55.5	2.8	47.25	46.0	2.3	67.47	54.1	2.4	91.56	27.2
3.6	52.56	55.8	3.8	47.75	45.9	3.3	67.04	54.2	3.4	90.31	27.4
4.6	53.06	56.2	4.8	48.25	45.7	4.3	66.63	54.2	4.4	89.09	27.5
5.6	53.55	56.5	5.8	48.71	45.6	5.3	66.22	54.3	5.4	87.92	27.7
6.6	54.06	56.8	6.8	49.17	45.5	6.3	65.84	54.4	6.4	86.79	27.9
7.6	54.62	57.1	7.8	49.62	45.4	7.3	65.46	54.4	7.4	85.68	28.1
8.6	55.19	57.4	8.8	50.08	45.2	8.3	65.06	54.5	8.3	84.57	28.3
9.6	55.83	57.7	9.8	50.53	45.1	9.3	64.66	54.6	9.3	83.46	28.5
10.6	56.48	58.0	10.8	51.04	44.9	10.3	64.24	54.7	10.3	82.30	28.7
11.6	57.14	58.4	11.8	51.55	44.7	11.3	63.82	54.8	11.3	81.07	29.0
12.6	57.78	58.7	12.8	52.10	44.6	12.3	63.36	54.9	12.3	79.79	29.2
13.6	58.39	59.1	13.8	52.67	44.4	13.3	62.91	55.0	13.3	78.45	29.4
14.6	58.92	59.5	14.8	53.24	44.3	14.3	62.42	55.0	14.3	77.04	29.6
15.6	59.39	59.9	15.8	53.82	44.2	15.3	61.97	55.1	15.3	75.63	29.8
16.6	59.79	60.3	16.8	54.38	44.1	16.3	61.50	55.1	16.3	74.20	29.9
17.6	60.14	60.7	17.8	54.92	44.1	17.3	61.06	55.1	17.3	72.82	30.1
18.6	60.47	61.0	18.8	55.42	44.0	18.3	60.64	55.0	18.3	71.48	30.2
19.6	60.79	61.4	19.8	55.91	44.0	19.3	60.24	55.0	19.3	70.19	30.3
20.6	61.14	61.7	20.8	56.38	43.9	20.3	59.84	55.0	20.3	68.98	30.4
21.5	61.52	62.0	21.8	56.85	43.8	21.3	59.44	55.0	21.3	67.77	30.6
22.5	61.93	62.4	22.8	57.32	43.7	22.2	59.05	55.1	22.3	66.58	30.7
23.5	62.39	62.7	23.8	57.82	43.6	23.2	58.65	55.1	23.3	65.37	30.9
24.5	62.85	63.0	24.8	58.32	43.5	24.2	58.21	55.1	24.3	64.10	31.1
25.5	63.32	63.4	25.8	58.86	43.4	25.2	57.78	55.2	25.3	62.79	31.2
26.5	63.75	63.8	26.8	59.43	43.3	26.2	57.32	55.2	26.3	61.39	31.4
27.5	64.14	64.2	27.8	60.01	43.2	27.2	56.87	55.2	27.3	59.94	31.6
28.5	64.45	64.6	28.8	60.60	43.2	28.2	56.39	55.2	28.3	58.43	31.7
29.5	64.71	65.0	29.8	61.19	43.2	29.2	55.92	55.1	29.3	56.91	31.8
30.5	64.90	65.5	30.8	61.76	43.1	30.2	55.46	55.1	30.3	55.39	31.9
31.5	65.06	65.9	31.7	62.31	43.1	31.2	55.01	55.0	31.3	53.92	32.0

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Oct.	h m 1 20	+88° 44′	Oct.	h m 6 50	+87° 12′	Oct.	h m 18 6	+86° 36′	Oct.	h m 19 30	+88° 58′
	s	″		s	″		s	″		s	″
1.5	5.06	5.9	1.7	2.31	43.1	1.2	55.01	55.0	1.3	53.92	32.0
2.5	5.19	6.2	2.7	2.84	43.2	2.2	54.58	54.9	2.3	52.49	32.0
3.5	5.34	6.6	3.7	3.34	43.2	3.2	54.18	54.8	3.3	51.12	32.1
4.5	5.50	7.0	4.7	3.85	43.2	4.2	53.77	54.7	4.3	49.77	32.1
5.5	5.71	7.3	5.7	4.34	43.1	5.2	53.35	54.7	5.3	48.46	32.2
6.5	5.97	7.7	6.7	4.85	43.1	6.2	52.96	54.7	6.3	47.14	32.3
7.5	6.24	8.0	7.7	5.37	43.0	7.2	52.53	54.6	7.3	45.81	32.4
8.5	6.54	8.4	8.7	5.92	43.0	8.2	52.12	54.6	8.3	44.42	32.5
9.5	6.81	8.8	9.7	6.50	43.0	9.2	51.66	54.5	9.3	42.97	32.6
10.5	7.06	9.3	10.7	7.09	43.0	10.2	51.21	54.5	10.3	41.45	32.7
11.5	7.23	9.7	11.7	7.70	43.0	11.2	50.75	54.4	11.3	39.90	32.8
12.5	7.35	10.0	12.7	8.29	43.0	12.2	50.28	54.3	12.3	38.32	32.8
13.5	7.38	10.5	13.7	8.90	43.0	13.2	49.83	54.2	13.3	36.74	32.9
14.5	7.37	11.0	14.7	9.46	43.1	14.2	49.40	54.0	14.3	35.20	32.9
15.5	7.31	11.3	15.7	10.00	43.2	15.2	48.97	53.9	15.3	33.69	32.9
16.5	7.24	11.7	16.7	10.51	43.3	16.2	48.59	53.8	16.2	32.26	32.9
17.5	7.17	12.1	17.7	11.00	43.3	17.2	48.20	53.6	17.2	30.89	32.9
18.5	7. 5	12.4	18.7	11.48	43.4	18.2	47.83	53.5	18.2	29.56	32.9
19.5	7.15	12.8	19.7	11.96	43.4	19.2	47.45	53.4	19.2	28.26	32.9
20.5	7.19	13.1	20.7	12.45	43.4	20.2	47.08	53.3	20.2	26.96	32.9
21.5	7.26	13.5	21.7	12.95	43.5	21.2	46.71	53.1	21.2	25.65	32.9
22.5	7.31	13.9	22.7	13.48	43.5	22.2	46.30	53.0	22.2	24.25	33.0
23.5	7.36	14.2	23.7	14.02	43.5	23.2	45.89	52.9	23.2	22.83	33.0
24.5	7.37	14.7	24.7	14.60	43.6	24.2	45.46	52.8	24.2	21.32	33.0
25.5	7.31	15.1	25.7	15.19	43.7	25.2	45.05	52.7	25.2	19.79	33.0
26.5	7.18	15.5	26.7	15.75	43.8	26.2	44.62	52.5	26.2	18.22	33.0
27.5	6.98	15.9	27.7	16.31	43.9	27.2	44.19	52.3	27.2	16.66	33.0
28.4	6.73	16.3	28.7	16.84	44.0	28.1	43.80	52.1	28.2	15.13	32.9
29.4	6.46	16.7	29.7	17.36	44.1	29.1	43.41	51.9	29.2	13.67	32.8
30.4	6.18	17.0	30.7	17.85	44.3	30.1	43.05	51.7	30.2	12.26	32.8
31.4	5.92	17.4	31.7	18.31	44.4	31.1	42.70	51.5	31.2	10.92	32.7
32.4	5.68	17.7	32.7	18.77	44.5	32.1	42.36	51.3	32.2	9.60	32.6

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Nov.	h m 1 19	° ′ +88 44	Nov.	h m 6 50	° ′ +87 12	Nov.	h m 18 6	° ′ +86 36	Nov.	h m 19 29	° ′ +88 58
	s	″		s	″		s	″		s	″
1.4	65.68	17.7	1.7	18.77	44.5	1.1	42.36	51.3	1.2	69.60	32.6
2.4	65.50	18.1	2.7	19.24	44.6	2.1	42.00	51.1	2.2	68.31	32.5
3.4	65.35	18.4	3.7	19.71	44.7	3.1	41.66	50.9	3.2	67.00	32.5
4.4	65.22	18.8	4.7	20.21	44.8	4.1	41.30	50.7	4.2	65.67	32.4
5.4	65.08	19.2	5.7	20.73	44.9	5.1	40.93	50.6	5.2	64.28	32.4
6.4	64.90	19.6	6.6	21.26	45.0	6.1	40.56	50.4	6.2	62.84	32.4
7.4	64.69	20.0	7.6	21.81	45.1	7.1	40.17	50.2	7.2	61.35	32.3
8.4	64.40	20.4	8.6	22.34	45.3	8.1	39.78	50.0	8.2	59.84	32.2
9.4	64.04	20.8	9.6	22.88	45.5	9.1	39.42	49.7	9.2	58.34	32.1
10.4	63.62	21.1	10.6	23.39	45.7	10.1	39.06	49.5	10.2	56.86	32.0
11.4	63.15	21.5	11.6	23.86	45.9	11.1	38.73	49.2	11.2	55.46	31.9
12.4	62.65	21.9	12.6	24.31	46.1	12.1	38.41	48.9	12.2	54.12	31.7
13.4	62.16	22.2	13.6	24.74	46.3	13.1	38.12	48.7	13.2	52.85	31.6
14.4	61.69	22.5	14.6	25.13	46.5	14.1	37.84	48.4	14.2	51.63	31.4
15.4	61.27	22.8	15.6	25.53	46.6	15.1	37.57	48.2	15.2	50.47	31.3
16.4	60.86	23.1	16.6	25.93	46.8	16.1	37.31	47.9	16.2	49.31	31.1
17.4	60.50	23.4	17.6	26.33	47.0	17.1	37.02	47.7	17.2	48.15	31.0
18.4	60.13	23.7	18.6	26.77	47.1	18.1	36.74	47.5	18.2	46.96	30.9
19.4	59.77	24.1	19.6	27.21	47.3	19.1	36.43	47.3	19.2	45.72	30.8
20.4	59.37	24.4	20.6	27.68	47.4	20.1	36.13	47.0	20.1	44.42	30.7
21.4	58.92	24.8	21.6	28.15	47.6	21.1	35.81	46.8	21.1	43.09	30.6
22.4	58.39	25.2	22.6	28.63	47.8	22.1	35.50	46.5	22.1	41.75	30.4
23.4	57.81	25.5	23.6	29.08	48.1	23.1	35.20	46.2	23.1	40.40	30.3
24.4	57.17	25.8	24.6	29.52	48.3	24.1	34.91	45.9	24.1	39.10	30.1
25.4	56.48	26.2	25.6	29.93	48.6	25.1	34.65	45.5	25.1	37.84	29.8
26.4	55.78	26.5	26.6	30.31	48.9	26.1	34.40	45.2	26.1	36.66	29.6
27.4	55.11	26.7	27.6	30.66	49.1	27.1	34.18	44.9	27.1	35.55	29.4
28.4	54.45	27.0	28.6	31.00	49.4	28.1	33.97	44.6	28.1	34.49	29.2
29.4	53.83	27.3	29.6	31.33	49.6	29.1	33.77	44.3	29.1	33.46	29.0
30.4	53.27	27.6	30.6	31.67	49.8	30.1	33.56	44.0	30.1	32.46	28.8
31.4	52.72	27.8	31.6	32.02	50.1	31.1	33.36	43.8	31.1	31.42	28.6

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Dec.	$1^h\ 19^m$	$+88° 44'$	Dec.	$6^h\ 50^m$	$+87° 12'$	Dec.	$18^h\ 6^m$	$+86° 36'$	Dec.	$19^h\ 29^m$	$+88° 58'$
	s	″		s	″		s	″		s	″
1.4	52.72	27.8	1.6	32.02	50.1	1.1	33.36	43.8	1.1	31.42	28.6
2.4	52.19	28.1	2.6	32.38	50.2	2.1	33.13	43.5	2.1	30.36	28.4
3.3	51.63	28.4	3.6	32.78	50.4	3.1	32.90	43.2	3.1	29.26	28.2
4.3	51.04	28.7	4.6	33.17	50.7	4.0	32.65	42.9	4.1	28.10	28.1
5.3	50.39	29.0	5.6	33.57	50.9	5.0	32.42	42.6	5.1	26.93	27.9
6.3	49.66	29.3	6.6	33.96	51.2	6.0	32.19	42.3	6.1	25.77	27.6
7.3	48.89	29.6	7.6	34.33	51.5	7.0	31.99	41.9	7.1	24.64	27.4
8.3	48.04	29.9	8.6	34.67	51.8	8.0	31.79	41.6	8.1	23.54	27.1
9.3	47.17	30.1	9.6	34.98	52.1	9.0	31.63	41.2	9.1	22.54	26.8
10.3	46.30	30.3	10.6	35.23	52.4	10.0	31.48	40.9	10.1	21.63	26.6
11.3	45.45	30.5	11.6	35.49	52.7	11.0	31.36	40.5	11.1	20.77	26.3
12.3	44.61	30.7	12.5	35.71	53.0	12.0	31.25	40.2	12.1	20.00	26.0
13.3	43.85	30.9	13.5	35.93	53.3	13.0	31.15	39.9	13.1	19.25	25.7
14.3	43.11	31.1	14.5	36.16	53.6	14.0	31.04	39.6	14.1	18.50	25.5
15.3	42.40	31.3	15.5	36.41	53.8	15.0	30.92	39.3	15.1	17.76	25.3
16.3	41.68	31.5	16.5	36.65	54.1	16.0	30.80	39.0	16.1	16.95	25.0
17.3	40.95	31.8	17.5	36.92	54.3	17.0	30.66	38.7	17.1	16.13	24.8
18.3	40.19	32.0	18.5	37.20	54.6	18.0	30.54	38.3	18.1	15.26	24.6
19.3	39.36	32.2	19.5	37.49	54.9	19.0	30.40	38.0	19.1	14.36	24.3
20.3	38.48	32.4	20.5	37.75	55.2	20.0	30.26	37.6	20.1	13.50	24.0
21.3	37.51	32.6	21.5	37.99	55.6	21.0	30.16	37.3	21.1	12.63	23.7
22.3	36.53	32.8	22.5	38.20	55.9	22.0	30.06	36.9	22.1	11.85	23.4
23.3	35.52	33.0	23.5	38.40	56.3	22.9	29.98	36.5	23.1	11.13	23.1
24.3	34.52	33.2	24.5	38.56	56.6	23.9	29.94	36.1	24.1	10.46	22.7
25.3	33.56	33.3	25.5	38.69	56.9	24.9	29.90	35.8	25.1	9.90	22.4
26.3	32.64	33.4	26.5	38.81	57.2	25.9	29.88	35.4	26.0	9.37	22.1
27.3	31.75	33.5	27.5	38.94	57.5	26.9	29.85	35.1	27.0	8.87	21.8
28.3	30.93	33.7	28.5	39.08	57.8	27.9	29.83	34.8	28.0	8.37	21.5
29.3	30.12	33.8	29.5	39.23	58.1	28.9	29.80	34.5	29.0	7.86	21.3
30.3	29.30	33.9	30.5	39.41	58.4	29.9	29.77	34.2	30.0	7.32	21.0
31.3	28.47	34.1	31.5	39.57	58.7	30.9	29.72	33.8	31.0	6.73	20.7
32.3	27.60	34.2	32.5	39.76	59.0	31.9	29.67	33.5	32.0	6.11	20.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Andromedæ.		γ Pegasi. (*Algenib.*)		β Hydri.		12 Ceti.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 0 2	° ′ +28 29	h m 0 7	° ′ +14 34	h m 0 20	° ′ -77 51	h m 0 24	° ′ - 4 32
	s	″	s	″	s	″	s	″
Jan. 0.2	47.08 -.14	42.0 -0.8	39.38 -.11	57.7 -0.7	4.38 -.90	70.2 +0.8	30.75 -.10	82.4 -0.6
10.2	46.94 .13	41.1 1.0	39.26 .11	56.9 0.9	3.50 .84	69.1 1.4	30.65 .10	82.9 0.5
20.2	46.81 .12	39.9 1.3	39.16 .10	56.0 1.0	2.69 .77	67.4 2.0	30.55 .10	83.4 0.4
30.2	46.70 .10	38.6 1.5	39.07 .09	55.0 1.0	1.96 .68	65.2 2.5	30.45 .09	83.7 0.3
Feb. 9.1	46.60 .08	37.1 1.6	38.99 .07	54.0 1.0	1.33 .57	62.5 2.9	30.37 .07	84.0 -0.1
19.1	46.53 -.05	35.5 -1.6	38.93 -.04	53.0 -0.9	0.82 -.44	59.4 +3.3	30.31 -.05	84.0 +0.1
29.1	46.49 -.02	33.9 1.5	38.90 -.01	52.1 0.8	0.45 .30	55.9 3.6	30.27 -.02	83.8 0.3
Mar. 10.0	46.49 +.02	32.4 1.4	38.90 +.02	51.4 0.6	0.22 -.15	52.2 3.8	30.26 +.01	83.5 0.5
20.0	46.53 .06	31.0 1.2	38.94 .06	50.8 0.4	0.15 .00	48.4 3.9	30.28 .04	82.9 0.7
30.0	46.61 .11	29.9 1.0	39.02 .10	50.5 -0.2	0.23 +.16	44.5 3.9	30.34 .08	82.0 0.9
Apr. 9.0	46.74 +.15	29.0 -0.7	39.13 +.14	50.4 +0.1	0.47 +.32	40.6 +3.8	30.44 +.12	81.0 +1.2
18.9	46.92 .20	28.5 -0.3	39.29 .18	50.6 0.4	0.86 .47	36.8 3.7	30.58 .16	79.6 1.4
28.9	47.14 .24	28.4 0.0	39.49 .22	51.2 0.7	1.41 .61	33.2 3.5	30.76 .20	78.1 1.6
May 8.9	47.40 .28	28.6 +0.4	39.73 .25	52.1 1.0	2.09 .75	29.9 3.2	30.98 .23	76.4 1.8
18.8	47.69 .31	29.2 0.8	40.00 .28	53.2 1.3	2.91 .87	26.9 2.8	31.23 .26	74.5 2.0
28.8	48.01 +.33	30.2 +1.2	40.30 +.30	54.7 +1.6	3.83+ .97	24.2 +2.4	31.51 +.29	72.4 +2.1
June 7.8	48.35 .34	31.6 1.5	40.62 .32	56.4 1.8	4.85 1.05	22.0 2.0	31.82 .31	70.3 2.1
17.8	48.70 .35	33.3 1.8	40.94 .33	58.3 2.0	5.93 1.10	20.3 1.5	32.13 .32	68.2 2.1
27.7	49.05 .34	35.3 2.1	41.27 .33	60.4 2.1	7.05 1.13	19.1 0.9	32.45 .32	66.1 2.1
July 7.7	49.39 .33	37.5 2.3	41.59 .32	62.6 2.2	8.18 1.12	18.5 +0.3	32.77 .31	64.0 2.0
17.7	49.71 +.31	39.9 +2.4	41.90 +.30	64.8 +2.2	9.30+1.09	18.5 -0.3	33.08 +.30	62.2 +1.8
27.7	50.01 .28	42.4 2.5	42.19 .27	67.0 2.2	10.36 1.02	19.0 0.8	33.38 .28	60.4 1.6
Aug. 6.6	50.28 .25	44.9 2.6	42.45 .24	69.1 2.1	11.34 .93	20.1 1.3	33.64 .25	58.9 1.4
16.6	50.51 .21	47.5 2.5	42.67 .21	71.2 2.0	12.21 .80	21.7 1.8	33.88 .22	57.7 1.1
26.6	50.70 .17	50.0 2.4	42.86 .17	73.1 1.8	12.94 .65	23.8 2.2	34.09 .19	56.7 0.8
Sept. 5.5	50.86 + 13	52.4 +2.3	43.02 +.13	74.8 +1.6	13.51 +.48	26.2 -2.6	34.26 +.15	56.0 +0.6
15.5	50.97 .09	54.7 2.2	43.13 .09	76.4 1.4	13.91 .30	29.0 2.8	34.39 .11	55.5 0.3
25.5	51.04 .05	56.8 2.0	43.21 .06	77.7 1.2	14.12 +.12	31.9 3.0	34.48 .08	55.3 +0.1
Oct. 5.5	51.08 +.02	58.7 1.8	43.25 +.03	78.8 1.0	14.14 -.07	35.0 3 0	34.54 .04	55.4 -0.1
15.4	51.08 -.01	60.4 1.5	43.26 .00	79.7 0.8	13.97 .26	37.9 2.9	34.57 +.01	55.6 0.3
25.4	51.04 -.04	61.8 +1.3	43.24 -.03	80.4 +0.5	13.62 -.43	40.7 -2.7	34.56 -.02	56.1 -0.5
Nov. 4.4	50.98 .07	62.9 1.0	43.20 .05	80.8 0.3	13.11 .58	43.3 2.3	34.54 .04	56.6 0.6
14.4	50.90 .09	63.7 0.7	43.13 .07	81.0 +0.1	12.46 .71	45.4 1.9	34.49 .06	57.3 0.7
24.3	50.80 .11	64.3 0.4	43.05 .09	81.0 -0.1	11.69 .81	47.0 1.4	34.42 .07	58.0 0.7
Dec. 4.3	50.69 .12	64.5 +0.1	42.96 .10	80.8 0.3	10.85 .87	48.2 0.8	34.34 .09	58.7 0.7
14.3	50.56 -.13	64.4 -0.3	42.85 -.11	80.4 -0.5	9.95 -.91	48.7 -0.2	34.24 -.10	59.5 -0.7
24.2	50.43 .13	64.0 0.6	42.74 .11	79.9 0.6	9.03 .91	48 5 +0.4	34.14 .10	60.2 0.6
34.2	50.30 -.14	63.2 -0.9	42.64 -.11	79.2 -0.8	8.13 -.88	47.8 +1.1	34.04 -.10	60.8 -0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cassiopeæ.		β Ceti.		21 Cassiopeæ.		ε Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 0 34	° ′ +55 56	h m 0 38	° ′ −18 34	h m 0 38	° ′ +74 23	h m 0 57	° ′ + 7 18
	s	″	s	″	s	″	s	″
Jan. 0.3	21.40 −.28	53.2 −0.1	9.44 −.12	58.8 −0.5	28.79 −.71	66.4 +0.3	19.51 −.11	28.1 −0.6
10.2	21.12 .28	52.8 0.6	9.32 .12	59.2 0.3	28.07 .72	66.5 −0.3	19.40 .11	27.4 0.6
20.2	20.83 .27	51.9 1.1	9.21 .11	59.4 −0.1	27.36 .70	65.9 0.9	19.29 .11	26.8 0.6
30.2	20.56 .26	50.6 1.5	9.10 .10	59.3 +0.2	26.68 .65	64.7 1.4	19.18 .11	26.2 0.6
Feb. 9.1	20.32 .23	48.8 1.9	9.01 .09	58.9 0.5	26.06 .58	63.0 1.9	19.08 .10	25.5 0.6
19.1	20.11 −.18	46.7 −2.2	8.93 −.07	58.3 +0.8	25.53 −.48	60.8 −2.3	18.99 −.08	25.0 −0.5
29.1	19.96 .13	44.4 2.4	8.87 .04	57.4 1.0	25.11 .36	58.3 2.6	18.92 .06	24.6 0.4
Mar. 10.1	19.86 −.06	41.9 2.5	8.85 −.01	56.2 1.3	24.82 .22	55.5 2.8	18.87 −.03	24.3 −0.2
20.0	19.83 +.01	39.4 2.4	8.85 +.02	54.8 1.5	24.67 −.07	52.6 2.9	18.86 +.01	24.2 0.0
30.0	19.87 .08	37.0 2.3	8.90 .06	53.1 1.8	24.67 +.08	49.6 2.9	18.89 .05	24.3 +0.2
Apr. 9.0	19.99 +.15	34.8 −2.1	8.98 +.11	51.2 +2.0	24.83 +.24	46.8 −2.7	18.96 +.09	24.6 +0.5
19.0	20.18 .22	32.8 1.8	9.11 .15	49.2 2.2	25.14 .38	44.2 2.4	19.07 .13	25.2 0.7
28.9	20.44 .29	31.2 1.4	9.28 .19	46.9 2.3	25.60 .51	42.0 2.1	19.22 .17	26.1 1.0
May 8.9	20.77 .35	30.0 1.0	9.49 .23	44.6 2.4	26.18 .63	40.1 1.6	19.42 .21	27.2 1.2
18.9	21.15 .40	29.3 −0.5	9.74 .26	42.1 2.4	26.87 .73	38.7 1.1	19.65 .25	28.6 1.5
28.8	21.58 +.44	29.1 0.0	10.02 +.29	39.7 +2.4	27.64 +.81	37.8 −0.6	19.91 +.28	30.2 +1.7
June 7.8	22.04 .47	29.3 +0.5	10.32 .31	37.3 2.3	28.48 .86	37.4 −0.1	20.20 .30	31.9 1.8
17.8	22.52 .48	30.1 1.0	10.64 .33	35.0 2.2	29.36 .89	37.6 +0.5	20.51 .31	33.8 2.0
27.8	23.01 .48	31.3 1.5	10.97 .33	32.8 2.0	30.25 .89	38.4 1.0	20.84 .32	35.8 2.0
July 7.7	23.49 .47	33.0 1.9	11.30 .33	30.9 1.8	31.14 .87	39.7 1.5	21.16 .32	37.9 2.0
17.7	23.95 +.45	35.1 +2.3	11.63 +.32	29.2 +1.5	31.99 +.83	41.4 +2.0	21.47 +.31	39.9 +2.0
27.7	24.39 .42	37.5 2.6	11.94 .30	27.8 1.2	32.79 .77	43.7 2.4	21.78 .29	41.9 1.9
Aug. 6.7	24.79 .38	40.3 2.9	12.23 .27	26.8 0.9	33.52 .69	46.3 2.8	22.06 .27	43.8 1.8
16.6	25.14 .33	43.2 3.1	12.49 .24	26.1 0.5	34.18 .60	49.3 3.1	22.32 .24	45.5 1.6
26.6	25.45 .28	46.4 3.2	12.71 .21	25.8 +0.2	34.74 .50	52.6 3.3	22.55 .21	47.0 1.4
Sept. 5.6	25.70 +.22	49.6 +3.3	12.90 +.17	25.8 −0.2	35.19 +.40	56.1 +3.6	22.75 +.18	48.4 +1.2
15.5	25.89 .16	52.9 3.3	13.05 .13	26.1 0.5	35.54 .29	59.7 3.7	22.91 .15	49.5 1.0
25.5	26.03 .11	56.2 3.2	13.16 .09	26.7 0.8	35.77 .17	63.4 3.7	23.04 .11	50.4 0.8
Oct. 5.5	26.11 +.05	59.4 3.1	13.23 .06	27.6 1.0	35.88 +.05	67.2 3.7	23.13 .08	51.0 0.5
15.5	26.13 .00	62.5 2.9	13.27 +.02	28.7 1.1	35.87 −.06	70.8 3.6	23.19 .05	51.4 0.3
25.4	26.10 −.05	65.3 +2.7	13.27 −.01	29.9 −1.2	35.75 −.17	74.3 +3.4	23.22 +.02	51.7 +0.1
Nov. 4.4	26.02 .10	67.9 2.4	13.24 .04	31.2 1.3	35.51 .29	77.6 3.1	23.23 −.01	51.7 0.0
14.4	25.89 .14	70.2 2.1	13.19 .06	32.5 1.3	35.17 .40	80.6 2.8	23.21 .03	51.6 −0.2
24.3	25.72 .18	72.0 1.7	13.12 .08	33.7 1.2	34.72 .49	83.2 2.3	23.16 .05	51.4 0.3
Dec. 4.3	25.52 .22	73.5 1.2	13.03 .09	34.8 1.1	34.19 .57	85.2 1.8	23.10 .07	51.0 0.4
14.3	25.28 −.25	74.5 +0.7	12.93 −.10	35.8 −0.9	33.58 −.64	86.8 +1.3	23.02 −.09	50.5 −0.5
24.3	25.02 .27	74.9 +0.2	12.82 .11	36.6 0.7	32.91 .68	87.9 0.7	22.93 .10	50.0 0.6
34.2	24.74 −.28	74.8 −0.3	12.71 −.12	37.2 −0.4	32.21 −.71	88.3 +0.1	22.82 −.11	49.4 −0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Andromedæ.		θ^1 Ceti.		38 Cassiopeæ.		η Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 1 3	+35° 2′	h m 1 18	− 8° 44′	h m 1 23	+69° 42′	h m 1 25	+14° 47′
	s	″	s	″	s	″	s	″
Jan. 0.3	40.20 −.14	58.8 −0.2	36.98 −.11	34.6 −0.7	10.49 −.49	45.7 +0.8	41.60 −.11	20.7 −0.5
10.2	40.05 .16	58.4 0.5	36.87 .11	35.2 0.6	9.98 .52	46.2 +0.2	41.49 .12	20.2 0.6
20.2	39.89 .16	57.7 0.8	36.76 .12	35.7 0.4	9.46 .53	46.1 −0.3	41.36 .12	19.6 0.6
30.2	39.73 .16	56.7 1.1	36.64 .12	36.0 −0.2	8.93 .52	45.5 0.9	41.24 .12	18.9 0.7
Feb. 9.2	39.58 .14	55.4 1.3	36.52 .11	36.1 0.0	8.42 .48	44.3 1.4	41.12 .11	18.2 0.7
19.1	39.44 −.12	54.0 −1.5	36.42 −.10	36.0 +0.2	7.96 −.43	42.6 −1.9	41.00 −.10	17.5 −0.7
29.1	39.33 .09	52.4 1.6	36.33 .08	35.7 0.4	7.56 .35	40.5 2.3	40.91 .08	16.8 0.6
Mar. 10.1	39.26 .05	50.8 1.6	36.27 .05	35.1 0.7	7.25 .26	38.1 2.5	40.84 .05	16.2 0.5
20.1	39.23 −.01	49.3 1.5	36.24 −.02	34.3 0.9	7.04 .15	35.5 2.7	40.80 −.02	15.7 0.4
30.0	39.24 +.04	47.8 1.4	36.24 +.02	33.3 1.2	6.95 −.04	32.8 2.7	40.80 +.02	15.3 −0.2
Apr. 9.0	39.31 +.09	46.5 −1.2	36.28 +.06	32.0 +1.4	6.97 +.08	30.0 −2.6	40.84 +.06	15.2 0.0
19.0	39.43 .15	45.5 0.9	36.37 .11	30.5 1.6	7.12 .20	27.4 2.5	40.92 .11	15.3 +0.2
28.9	39.60 .20	44.8 0.6	36.50 .15	28.8 1.8	7.39 .32	25.1 2.2	41.05 .15	15.7 0.5
May 8.9	39.82 .24	44.4 −0.2	36.67 .19	26.8 2.0	7.77 .43	23.0 1.8	41.23 .19	16.3 0.8
18.9	40.09 .28	44.4 +0.2	36.88 .23	24.8 2.1	8.25 .52	21.4 1.4	41.45 .23	17.2 1.0
28.9	40.39 +.32	44.7 +0.5	37.13 +.26	22.6 +2.2	8.81 +.60	20.1 −1.0	41.70 +.27	18.4 +1.3
June 7.8	40.73 .35	45.4 0.9	37.40 .29	20.4 2.2	9.45 .66	19.4 −0.5	41.98 .30	19.8 1.5
17.8	41.08 .36	46 6 1.3	37.70 .31	18.1 2.2	10.14 .70	19.2 0.0	42.29 .32	21.4 1.7
27.8	41.45 .37	48.0 1.6	38.01 .32	15.9 2.1	10.85 .73	19.4 +0.5	42.61 .33	23.2 1.8
July 7.8	41.82 .37	49.7 1.9	38.34 .32	13.8 2.0	11.59 .73	20.2 1.0	42.94 .33	25.1 1.9
17.7	42.19 +.36	51.7 +2.1	38.65 +.31	11.9 +1.8	12.32 +.72	21.5 +1 5	43.26 +.32	27.0 +2.0
27.7	42.53 .34	53.9 2.2	38.96 .30	10.2 1.6	13.02 .69	23.2 1.9	43.58 .31	29.0 2.0
Aug. 6.7	42.86 .31	56.2 2.4	39.26 .28	8.7 1.3	13.70 .65	25.4 2.3	43.88 .29	31.0 1.9
16.6	43.16 .28	58.6 2.5	39.53 .26	7.5 1.0	14.32 .59	27.9 2 7	44.16 .27	32.8 1.8
26.6	43.43 .25	61.1 2.5	39.78 .23	6.6 0.7	14.88 .52	30.8 3.0	44.42 .24	34.6 1.7
Sept. 5.6	43.65 +.21	63.6 +2.5	39.99 +.20	6.1 +0.4	15.37 +.45	33.9 +3.2	44.64 +.21	36.2 +1.5
15.6	43.84 .17	66.1 2.4	40.17 .16	5.8 +0.1	15.79 .37	37.2 3.4	44.84 .18	37.7 1.4
25.5	44.00 .13	68.4 2.3	40.32 .13	5.9 −0.2	16.12 .29	40.7 3.5	44.99 .14	39.0 1.2
Oct. 5.5	44.11 .09	70.6 2.2	40.43 .10	6.2 0.4	16.37 .20	44.2 3.5	45.12 .11	40.0 1.0
15.5	44.18 .05	72.7 2.0	40.51 .06	6.7 0.6	16.52 .11	47.7 3 5	45.21 .08	40.9 0.8
25.5	44.22 +.02	74.6 +1.8	40.56 +.03	7.5 −0.8	16.59 +.02	51.2 +3.4	45.28 +.05	41.6 +0.6
Nov. 4.4	44.23 −.01	76.2 1.5	40.58 .00	8.4 0.9	16.56 −.07	54.4 3.2	45.31 +.02	42.0 0.4
14.4	44.20 .04	77.6 1.2	40.57 −.02	9.4 1.0	16.45 .16	57.5 2.9	45.31 −.01	42 3 +0.2
24.4	44.14 .07	78.7 0.9	40.54 .04	10.4 1.0	16.24 .24	60.3 2.6	45.29 .03	42.5 0.0
Dec. 4.3	44.06 .10	79.5 0.6	40.48 .06	11.4 1.0	15.96 .32	62.7 2.2	45.25 .06	42.4 −0.1
14.3	43.95 −.13	80.0 +0.3	40.40 −.08	12.3 −0.9	15.59 −.39	64.6 +1.7	45.18 −.08	42.2 −0.3
24.3	43.82 .14	80.2 0.0	40.31 .10	13.2 0.8	15.17 .45	66.0 1.2	45.09 .10	41.9 0.4
34.3	43.67 −.15	80.0 −0.3	40.21 −.11	13 9 −0.7	14.69 −.50	66.9 +0.6	44.99 −.11	41.5 −0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Eridani. (*Achernar.*)		*o* Piscium.		*β* Arietis.		50 Cassiopeæ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 1 33	° ′ −57 46	h m 1 39	° ′ + 8 36	h m 1 48	° ′ +20 16	h m 1 54	° ′ +71 53
	s	″	s	″	s	″	s	″
Jan. 0.3	41.67 −.31	88.5 −0.6	40.91 −.10	48.5 −0.5	39.86 −.10	50.5 −0.3	12.10 −.51	69.8 +1.2
10.3	41.36 .32	88.8 0.0	40.80 .11	48.0 0.6	39.75 .12	50.1 0.4	11.56 .56	70.7 0.7
20.2	41.03 .32	88.6 +0.5	40.69 .12	47.4 0.6	39.62 .13	49.6 0.6	10.97 .60	71.1 +0.1
30.2	40.72 .31	87.8 1.1	40.56 .12	46.8 0.6	39.48 .14	49.0 0.7	10.37 .60	70.9 −0.5
Feb. 9.2	40.42 .29	86.5 1.6	40.44 .12	46.3 0.5	39.34 .13	48.3 0.8	9.77 .58	70.2 1.0
19.2	40.14 −.26	84.6 +2.1	40.32 −.11	45.8 −0.5	39.21 −.12	47.5 −0.8	9.20 −.54	68.9 −1.5
29.1	39.89 .22	82.3 2.5	40.22 .09	45.4 0.4	39.10 .10	46.7 0.8	8.70 .47	67.1 2.0
Mar. 10.1	39.69 .17	79.6 2.8	40.14 .06	45.1 −0.2	39.00 .08	45.8 0.8	8.27 .37	64.9 2.3
20.1	39.55 .12	76.6 3.1	40.09 −.03	44.9 0.0	38.94 .05	45.1 0.7	7.96 .26	62.5 2.5
30.0	39.46 −.06	73.4 3.4	40.08 +.01	45.0 +0.1	38.91 −.01	44.5 0.5	7.76 −.14	59.8 2.7
Apr. 9.0	39.43 +.01	69.9 +3.6	40.11 +.05	45.2 +0.3	38.93 +.04	44.1 −0.3	7.68 .00	57.1 −2.7
19.0	39.48 .08	66.2 3.7	40.17 .09	45.7 0.6	39.00 .09	43.8 −0.1	7.75 +.14	54.5 2.6
29.0	39.59 .15	62.6 3.7	40.29 .14	46.4 0.8	39.11 .14	43.8 +0.1	7.96 .27	51.9 2.4
May 8.9	39.78 .22	58.9 3.6	40.45 .18	47.3 1.1	39.27 .18	44.0 0.4	8.29 .39	49.6 2.1
18.9	40.03 .28	55.4 3.4	40.65 .22	48.5 1.3	39.47 .22	44.6 0.7	8.74 .51	47.6 1.8
28.9	40.35 +.34	52.0 +3.2	40.88 +.26	49.9 +1.5	39.72 +.26	45.4 +0.9	9.31 +.61	46.0 −1.4
June 7.9	40.72 .39	48.9 2.9	41.16 .28	51.5 1.7	39.99 .29	46.4 1.2	9.96 .69	44.9 0.9
17.8	41.14 .43	46.2 2.6	41.45 .30	53.3 1.8	40.30 .31	47.8 1.4	10.68 .75	44.2 −0.4
27.8	41.59 .46	43.8 2.1	41.76 .32	55.1 1.9	40.62 .33	49.2 1.6	11.46 .79	44.0 +0.1
July 7.8	42.07 .48	41.9 1.6	42.08 .32	57.1 1.9	40.96 .33	50.9 1.7	12.26 .81	44.4 0.6
17.7	42.56 +.49	40.5 +1.1	42.40 +.32	59.0 +1.9	41.29 +.33	52.7 +1.8	13.08 +.81	45.2 +1.1
27.7	43.05 .48	39.6 +0.6	42.72 .31	60.9 1.9	41.62 .32	54.6 1.9	13.89 .80	46.5 1.5
Aug. 6.7	43.52 .46	39.3 0.0	43.02 .29	62.7 1.8	41.94 .31	56.6 1.9	14.68 .77	48.2 1.9
16.7	43.97 .43	39.6 −0.6	43.30 .27	64.4 1.6	42.24 .29	58.5 1.9	15.42 .72	50.3 2.3
26.6	44.37 .38	40.5 1.1	43.56 .24	66.0 1.4	42.51 .26	60.3 1.8	16.11 .66	52.8 2.7
Sept. 5.6	44.73 +.33	41.9 −1.6	43.80 +.22	67.3 +1.2	42.76 +.23	62.1 +1.7	16.74 +.59	55.7 +3.0
15.6	45.03 .27	43.7 2.0	44.00 .19	68.4 1.0	42.98 .20	63.7 1.6	17.28 .51	58.8 3.2
25.6	45.26 .20	46.0 2.4	44.16 .15	69.4 0.8	43.16 .17	65.2 1.4	17.75 .42	62.1 3.4
Oct. 5.5	45.43 .13	48.5 2.7	44.30 .12	70.1 0.6	43.32 .14	66.5 1.2	18.13 .33	65.5 3.5
15.5	45.52 +.06	51.3 2.8	44.41 .09	70.5 0.4	43.44 .10	67.7 1.1	18.40 .23	69.0 3.5
25.5	45.55 −.01	54.2 −2.9	44.48 +.06	70.8 +0.2	43.52 +.07	68.7 +0.9	18.58 +.12	72.4 +3.4
Nov. 4.5	45.50 .07	57.0 2.8	44.53 .03	70.9 0.0	43.58 .04	69.4 0.7	18.65 +.02	75.8 3.3
14.4	45.40 .13	59.8 2.6	44.55 +.01	70.8 −0.1	43.61 +.01	70.1 0.5	18.62 −.09	79.1 3.1
24.4	45.23 .18	62.2 2.3	44.54 −.02	70.6 0.3	43.61 −.01	70.5 0.3	18.48 .19	82.1 2.8
Dec. 4.4	45.02 .23	64.4 1.9	44.50 .04	70.3 0.4	43.58 .04	70.8 +0.2	18.23 .29	84.8 2.5
14.3	44.77 −.27	66.1 −1.5	44.45 −.06	69.9 −0.4	43.53 −.07	70.8 0.0	17.89 −.38	87.1 +2.1
24.3	44.48 .30	67.3 1.0	44.37 .08	69.4 0.5	43.45 .09	70.8 −0.2	17.46 .46	89.0 1.6
34.3	44.17 −.32	68.0 −0.4	44.28 −.10	68.9 −0.6	43.35 −.11	70.5 −0.4	16.96 −.53	90.3 +1.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Arietis.		ξ¹ Ceti.		ι Cassiopeæ.		ξ² Ceti.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 2 1	+22° 57′	h m 2 7	+ 8° 20′	h m 2 20	+66° 54′	h m 2 22	+ 7° 58′
	s	″	s	″	s	″	s	″
Jan. 0.3	4.61 −.10	9.4 −0.1	16.18 −.09	22.7 −0.5	9.47 −.35	73.9 +1.4	24.73 −.08	32.0 −0.5
10.3	4.50 .12	9.2 0.3	16.08 .11	22.2 0.5	9.09 .40	75.0 0.9	24.64 .10	31.5 0.5
20.3	4.37 .13	8.8 0.5	15.97 .12	21.7 0.5	8.66 .44	75.7 +0.3	24.53 .12	31.0 0.5
30.2	4.22 .14	8.2 0.6	15.84 .13	21.2 0.5	8.21 .46	75.7 −0.2	24.40 .13	30.5 0.5
Feb. 9.2	4.08 .14	7.5 0.7	15.70 .13	20.7 0.5	7.75 .46	75.2 0.7	24.26 .14	30.0 0.4
19.2	3.94 −.13	6.7 −0.8	15.58 −.12	20.2 −0.4	7.30 −.43	74.2 −1.2	24.13 −.13	29.6 −0.4
29.2	3.81 .11	5.8 0.9	15.46 .11	19.9 0.3	6.88 .39	72.8 1.6	24.00 .12	29.3 0.3
Mar. 10.1	3.70 .09	5.0 0.9	15.36 .09	19.6 −0.2	6.52 .33	70.9 2.0	23.89 .10	29.0 −0.2
20.1	3.63 .06	4.1 0.8	15.28 .06	19.5 0.0	6.23 .24	68.8 2.3	23.80 .07	29.0 0.0
30.1	3.59 −.02	3.4 0.7	15.24 −.02	19.6 +0.1	6.03 .15	66.4 2.4	23.75 −.04	29.0 +0.2
Apr. 9.0	3.60 +.03	2.8 −0.5	15.24 +.02	19.8 +0.3	5.93 −.05	63.9 −2.5	23.73 .00	29.3 +0.4
19.0	3.65 .08	2.4 0.3	15.28 .06	20.2 0.6	5.94 +.06	61.4 2.4	23.76 +.05	29.8 0.6
29.0	3.75 .13	2.2 −0.1	15.37 .11	20.9 0.8	6.06 .17	58.9 2.3	23.84 .10	30.4 0.8
May 9.0	3.90 .17	2.2 +0 2	15.50 .16	21.8 1.0	6.28 .28	56.7 2.1	23.95 .14	31.3 1.0
18.9	4.10 .22	2.6 0.5	15.68 .20	23.0 1.2	6.61 .38	54.7 1.8	24.12 .18	32.4 1.2
28.9	4.34 +.26	3.2 +0.8	15.90 +.23	24.3 +1.4	7.04 +.46	53.1 −1.4	24.32 +.22	33.8 +1.4
June 7.9	4.61 .29	4.1 1.0	16.15 .26	25.8 1.6	7.54 .53	51.9 1.0	24.56 .26	35.3 1.6
17.8	4.91 .31	5.2 1.2	16.43 .29	27.5 1.7	8.10 .59	51.1 0.6	24.83 .28	36.9 1.7
27.8	5.24 .33	6.6 1.4	16.73 .31	29.3 1.8	8.72 .64	50.7 −0.1	25.13 .30	38.7 1.8
July 7.8	5.57 .34	8.1 1.6	17.05 .32	31.2 1.9	9.38 .66	50.8 +0.4	25.44 .31	40.5 1.8
17.8	5.91 +.34	9.8 +1.8	17.37 +.32	33.0 +1.9	10.05 +.67	51.4 +0.8	25.76 +.32	42.3 +1.8
27.7	6.25 .33	11.6 1.8	17.68 .31	34.9 1.8	10.73 .67	52.5 1.2	26.08 .31	44.1 1.8
Aug. 6.7	6.58 .32	13.5 1.9	17.99 .30	36.6 1.7	11.39 .65	53.9 1.6	26.39 .30	45.8 1.7
16.7	6.88 .30	15.4 1.9	18.29 .28	38.2 1.5	12.03 .62	55.8 2.0	26.69 .29	47.4 1.5
26.7	7.17 .27	17.2 1.8	18.56 .26	39.7 1.4	12.64 .58	57.9 2.3	26.97 .27	48.8 1.3
Sept. 5.6	7.43 +.25	19.0 +1.7	18.81 +.24	41.0 +1.2	13.20 +.53	60.4 +2.6	27.23 +.25	50.0 +1.1
15.6	7.66 .22	20.7 1.6	19.04 .21	42.0 0.9	13.70 .47	63.2 2.9	27.46 .22	51.1 0.9
25.6	7.87 .19	22.3 1.5	19.23 .18	42.9 0.7	14.15 .41	66.2 3.1	27.67 .19	51.9 0.7
Oct. 5.5	8.04 .15	23.7 1.3	19.39 .15	43.5 0.5	14.52 .34	69.3 3.2	27.84 .16	52.4 0.5
15.5	8.17 .12	25.0 1.2	19.53 .12	43.9 0.3	14.83 .27	72.5 3 2	27.99 .13	52.8 0.3
25.5	8.28 +.09	26.1 +1.0	19.63 +.09	44.1 +0.1	15.05 +.19	75.8 +3.2	28.11 +.10	53.0 +0.1
Nov. 4.5	8.35 .06	27.1 0.9	19.70 .06	44.2 0.0	15.20 .10	79.0 3.1	28.20 .07	52.9 −0.1
14.4	8.39 +.03	27.8 0.7	19.75 +.03	44.1 −0.2	15.26 +.02	82.1 3.0	28.26 .04	52.8 0.2
24.4	8.40 .00	28.4 0.5	19.76 .00	43.8 0.3	15.24 −.07	85.0 2.8	28.29 +.02	52.5 0.3
Dec. 4.4	8.39 −.03	28.8 0.3	19.75 −.02	43.5 0.4	15.13 .15	87.7 2.5	28.29 −.01	52.1 0.4
14.4	8.34 −.06	29.1 +0.1	19.71 −.05	43.1 −0.5	14.94 −.23	90.0 +2.1	28.27 −.04	51.7 −0.5
24.3	8.27 .08	29.1 0.0	19.65 .07	42.6 0.5	14.67 .30	91.9 1.7	28.21 .07	51.2 0.5
34.3	8.17 −.10	29.0 −0.2	19.56 −.09	42.1 −0.5	14.33 −.37	93.4 +1.2	28.13 −.09	50.7 −0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ceti.		α Ceti.		48 Cephei (H.)		ζ Arietis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 2 37	+ 2° 46′	h m 2 56	+ 3° 39′	h m 3 6	+77° 20′	h m 3 8	+20° 38′
	s	″	s	″	s	″	s	″
Jan. 0.3	42.08 −.08	47.7 −0.7	37.94 −.07	55.8 −0.7	38.33 −.58	28.9 +2.2	41.49 −.06	42.1 0.0
10.3	41.99 .10	47.1 0.6	37.85 .10	55.1 0.6	37.69 .70	30.8 1.7	41.41 .09	42.0 −0.1
20.3	41.88 .12	46.5 0.5	37.75 .12	54.5 0.5	36.94 .80	32.3 1.2	41.30 .12	41.8 0.2
30.3	41.75 .13	46.0 0.4	37.62 .13	54.0 0.4	36.10 .86	33.2 +0.6	41.17 .14	41.5 0.3
Feb. 9.2	41.61 .14	45.6 0.3	37.48 .14	53.6 0.3	35.22 .89	33.5 0.0	41.02 .15	41.2 0.4
19.2	41.47 −.14	45.3 −0.2	37.34 −.14	53.3 −0.2	34.32 −.88	33.2 −0.6	40.86 −.16	40.7 −0.5
29.2	41.34 .13	45.1 −0.1	37.20 .13	53.1 −0.1	33.45 .84	32.3 1.1	40.71 .15	40.2 0.5
Mar. 10.2	41.22 .11	45.1 +0.1	37.06 .12	53.1 0.0	32.65 .75	30.9 1.6	40.56 .14	39.7 0 5
20.1	41.12 .08	45.2 0.2	36.96 .10	53.2 +0.2	31.96 .63	29.0 2.0	40.43 .11	39.2 0.5
30.1	41.06 .05	45.6 0.4	36.87 .07	53.4 0.4	31.40 .48	26.8 2.4	40.34 .08	38.7 0.4
Apr. 9.1	41.03 −.01	46.1 +0.6	36.82 −.03	53.9 +0.6	31.00 −.31	24.3 −2.6	40.28 −.04	38.3 −0.3
19.0	41.04 +.03	46.8 0.8	36.82 +.01	54.6 0.8	30.78 −.12	21.6 2.7	40.26 +.01	38.0 0.2
29.0	41.09 .08	47.8 1.0	36.86 .06	55.5 1.0	30.75 +.07	18.9 2.7	40.30 .06	37.8 −0.1
May 9.0	41.19 .12	49.0 1.2	36.94 .11	56.6 1.2	30.92 .26	16.2 2.6	40.38 .11	37.9 +0.1
19.0	41.34 .17	50.3 1.4	37.07 .15	57.8 1.4	31.27 .44	13.6 2.4	40.51 .15	38.1 0.4
28.9	41.52 +.21	51.9 +1.6	37.24 +.19	59.3 +1.5	31.79 +.61	11.3 −2.2	40.69 +.20	38.6 +0.6
June 7.9	41.75 .24	53.6 1.8	37.45 .23	60.9 1.7	32.48 .76	9.3 1.9	40.90 .24	39.2 0.6
17.9	42.01 .27	55.4 1.9	37.70 .26	62.6 1.8	33.30 .89	7.6 1.5	41.16 .27	40.1 1.0
27.9	42.29 .29	57.3 1.9	37.97 .28	64.4 1.8	34.25 .99	6.4 1.0	41.45 .30	41.2 1.1
July 7.8	42.59 .31	59.2 1.9	38.26 .30	66.2 1.8	35.28 1.07	5.6 0.5	41.75 .32	42.4 1.3
17.8	42.90 +.31	61.0 +1.8	38.57 +.31	68.1 +1.8	36.39+1.12	5.3 −0.1	42.08 +.33	43.7 +1.4
27.8	43.22 .31	62.8 1.7	38.88 .31	69.8 1.7	37.53 1.15	5.4 +0.4	42.41 .33	45.1 1.4
Aug. 6.7	43.52 .30	64.5 1.6	39.19 .31	71.4 1.5	38.69 1.16	6.0 0.8	42.74 .33	46.6 1.5
16.7	43.82 .29	66.0 1.4	39.50 .30	72.9 1.3	39.85 1.14	7.1 1.3	43.07 .32	48.1 1.5
26.7	44.11 .27	67.2 1.2	39.79 .28	74.1 1.1	40.98 1.11	8.6 1.7	43.38 .31	49.5 1.4
Sept. 5.7	44.38 +.25	68.3 +0.9	40.06 +.26	75.2 +0.9	42.06+1.05	10.5 +2.1	43.68 +.29	50.9 +1.3
15.6	44.62 .23	69.0 0.6	40.32 .24	76.0 0.7	43.07 .97	12.8 2.4	43.96 .27	52.2 1.2
25.6	44.83 .20	69.6 0.4	40.55 .22	76.5 0.4	44.00 .88	15.4 2.7	44.22 .24	53.4 1.1
Oct. 5.6	45.02 .17	69.8 +0.1	40.76 .19	76.8 +0.2	44.83 .77	18.3 3.0	44.45 .22	54.4 1.0
15.6	45.18 .14	69.8 −0.1	40.93 .16	76.8 −0.1	45.54 .64	21.5 3.2	44.65 .19	55.3 0.8
25.5	45.31 +.11	69.7 −0.3	41.08 +.14	76.6 −0.3	46.11 +.50	24.8 +3.3	44.83 +.16	56.1 +0.7
Nov. 4.5	45.42 .09	69.3 0.5	41.20 .11	76 3 0.4	46.54 .35	28.2 3.4	44.98 .13	56.7 0.6
14.5	45.49 .06	68.8 0.6	41.30 .08	75.8 0.5	46.82 .19	31.6 3.4	45.09 .10	57.3 0.5
24.4	45.53 +.03	68.2 0.6	41.36 .05	75.2 0.6	46.93 +.02	34.9 3.3	45.17 .07	57.7 0.4
Dec. 4.4	45.54 .00	67.5 0.7	41.39 +.01	74.5 0.7	46.87 −.14	38.2 3.1	45.22 +.03	58.0 0.2
14.4	45.52 −.03	66.8 −0.7	41.39 −.02	73.8 −0.7	46.64 −.31	41.2 +2.8	45.23 .00	58.2 +0.1
24.4	45.48 .06	66.1 0.7	41.35 .05	73.1 0.7	46.25 .47	43.8 2.5	45.21 −.04	58.3 0.0
34.3	45.40 −.09	65.4 −0.7	41.29 −.08	72.4 −0.6	45.71 −.62	46.1 +2.1	45.16 −.07	58.2 −0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Persei.		ε Eridani.		δ Persei.		η Tauri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 3 16	° ′ +49 28	h m 3 27	° ′ − 9 49	h m 3 35	° ′ +47 26	h m 3 41	° ′ +23 46
	s	″	s	″	s	″	s	″
Jan. 0.4	36.74 -.11	45.8 +1.2	50.71 -.06	29.6 -1.2	14.23 -.09	40.4 +1.3	3.87 -.04	19.9 +0.2
10.3	36.60 .16	46.8 0 9	50.64 .09	30.7 1.0	14.12 .13	41.5 1.0	3.81 .08	20.0 +0.1
20.3	36.42 .20	47.6 0.6	50.53 .12	31.6 0.8	13.96 .17	42.3 0.7	3.71 .11	20.0 0.0
30.3	36.20 .23	47.9 +0.2	50.40 .14	32.3 0.6	13.76 .21	42.8 +0.3	3.59 .14	19.9 -0.1
Feb. 9.3	35.96 .25	47.9 -0.2	50.25 .15	32.7 0.3	13.54 .23	43.0 0.0	3.44 .16	19.7 0.2
19.2	35.71 -.25	47.5 -0.6	50.09 -.16	32.9 -0.1	13.30 -.24	42.7 -0.4	3.27 -.17	19.4 -0.3
29.2	35.45 .24	46.8 0.9	49.93 .16	32.9 +0.2	13.05 .24	42.2 0.7	3.10 .17	19.0 0.4
Mar. 10.2	35.22 .22	45.7 1.2	49.78 .15	32.6 0.4	12.82 .22	41.3 1.0	2.94 .16	18.6 0.5
20.1	35.01 .18	44.3 1.4	49.64 .13	32.0 0.7	12.61 .19	40.2 1.2	2.79 .14	18.1 0.5
30.1	34.85 .14	42.8 1.6	49.52 .10	31.2 1.0	12.43 .15	38.8 1.4	2.67 .11	17.5 0.5
Apr. 9.1	34.74 -.08	41.1 -1.7	49.44 -.06	30.1 +1.2	12.31 -.10	37.3 -1.5	2.58 -.07	17.0 -0.5
19.1	34.69 -.01	39.4 1.7	49.40 -.02	28.8 1.4	12.24 -.04	35.8 1.6	2.54 -.02	16.6 0.4
29.0	34.71 +.05	37.8 1.6	49.40 +.02	27.2 1.6	12.24 +.03	34.2 1.5	2.51 +.03	16.3 0.3
May 9.0	34.80 .12	36.2 1.5	49.44 .06	25.5 1.8	12.30 .10	32.7 1.4	2.59 .08	16.1 -0.1
19.0	34.96 .19	34.8 1.3	49.53 .11	23.5 2.0	12.44 .16	31.4 1.3	2.69 .13	16.1 +0.1
29.0	35.18 +.25	33.6 -1.0	49.66 +.16	21.4 +2.1	12.63 +.22	30.2 -1.1	2.84 +.17	16.2 +0.3
June 7.9	35.46 .31	32.6 0.7	49.84 .20	19.2 2.2	12.88 .28	29.3 0.8	3.04 .21	16.6 0.5
17.9	35.79 .35	32.0 0.4	50.05 .23	17.0 2.3	13.18 .33	28.6 0.5	3.27 .25	17.2 0.6
27.9	36.17 .39	31.7 -0.1	50.29 .26	14.7 2.2	13.53 .37	28.2 -0.2	3.54 .28	17.9 0.8
July 7.8	36.58 .42	31.8 +0.2	50.56 .28	12.5 2.1	13.92 .40	28.2 +0.1	3.84 .30	18.8 1.0
17.8	37.01 +.44	32.2 +0.5	50.85 +.29	10.4 +2.0	14.33 +.42	28.4 +0.4	4.15 +.32	19.8 +1.1
27.8	37.45 .45	32.8 0.8	51.15 .30	8.6 1.8	14.75 .43	28.9 0.7	4.48 .33	20.9 1.2
Aug. 6.8	37.90 .45	33.8 1.1	51.46 .30	6.9 1.5	15.19 .43	29.7 0.9	4.82 .34	22.1 1.2
16.7	38.35 .44	35.1 1.4	51.76 .30	5.5 1.2	15.62 .43	30.8 1.2	5.15 .33	23.4 1.2
26.7	38.78 .42	36.6 1.6	52.06 .29	4.4 0.9	16.04 .42	32.0 1.4	5.48 .32	24.6 1.2
Sept. 5.7	39.19 +.40	38.3 +1.8	52.34 +.28	3.7 +0.5	16.46 +.40	33.5 +1.6	5.80 +.31	25.8 +1.2
15.7	39.58 .38	40.2 1.9	52.61 .26	3.4 +0.2	16.85 .38	35.2 1.7	6.10 .29	27.0 1.1
25.6	39.94 .35	42.2 2.1	52.86 .24	3.4 -0.2	17.22 .35	37.0 1.8	6.39 .27	28.1 1.0
Oct. 5.6	40.27 .31	44.3 2.2	53.08 .21	3.8 0.5	17.56 .32	38.9 1.9	6.65 .25	29.1 0.9
15.6	40.56 .27	46.5 2.2	53.28 .18	4.5 0.8	17.86 .29	40.9 2.0	6.89 .23	30.0 0.9
25.5	40.82 +.23	48.8 +2.2	53.45 +.15	5.4 -1.1	18.13 +.25	42.9 +2.0	7.11 +.20	30.8 +0.8
Nov. 4.5	41.02 .18	51.0 2.2	53.59 .13	6.6 1.3	18.36 .21	44.9 2.0	7.29 .17	31.5 0.7
14.5	41.18 .13	53.2 2.1	53.71 .10	8.0 1.4	18.55 .16	46.9 2.0	7.45 .14	32.1 0.6
24.5	41.29 .08	55.3 2.0	53.78 .06	9.4 1.5	18.68 .11	48.9 1.9	7.57 .10	32.7 0.5
Dec. 4.4	41.35 +.03	57.3 1.9	53.83 +.03	10.9 1.5	18.77 .06	50.8 1.8	7.65 .06	33.1 0.4
14.4	41.35 -.02	59.1 +1 7	53.84 .00	12.4 -1.4	18.80 +.01	52.5 +1.6	7.70 +.02	33.5 +0.3
24.4	41.30 .08	60.7 1.4	53.82 -.04	13.7 1.3	18 78 -.05	54.0 1.4	7.70 -.01	33.8 0.2
34.4	41.20 -.13	61.9 +1.1	53.77 -.07	14.9 -1.1	18.71 -.10	55.3 +1.2	7.67 -.05	34.0 +0.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Persei.		γ Eridani.		γ Tauri.		ε Tauri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 3 47	° ′ +31 33	h m 3 52	° ′ −13 48	h m 4 13	° ′ +15 22	h m 4 22	° ′ +18 56
	s	″	s	″	s	″	s	″
Jan. 0.4	20.65 −.04	51.4 +0.6	59.83 −.05	61.3 −1.4	39.03 −.01	2.8 −0.2	18.81 .00	29.9 0.0
10.4	20.59 .08	51.9 0.4	59.76 .08	62.6 1.2	39.00 .05	2.6 0.2	18.78 −.05	29.9 0.0
20.3	20.48 .12	52.2 0.2	59.66 .11	63.7 1.0	38.93 .09	2.4 0.2	18.72 .09	29.8 −0.1
30.3	20.35 .15	52.4 +0.1	59.54 .14	64.6 0.7	38.82 .12	2.2 0.2	18.62 .12	29.7 0.1
Feb. 9.3	20.18 .17	52.3 −0.1	59.39 .16	65.2 0.4	38.69 .14	1.9 0.2	18.48 .14	29.6 0.2
19.3	20.00 −.18	52.1 −0.3	59.22 −.17	65.5 −0.2	38.54 −.16	1.7 −0.2	18.33 −.16	29.4 −0.2
29.2	19.82 .18	51.7 0.5	59.05 .17	65.5 +0.1	38.38 .16	1.5 0.2	18.16 .17	29.2 0.2
Mar. 10.2	19.64 .17	51.1 0.6	58.89 .16	65.2 0.4	38.21 .16	1.3 0.2	17.99 .16	29.0 0.2
20.2	19.47 .15	50.5 0.7	58.73 .14	64.6 0.7	38.06 .15	1.1 0.2	17.83 .15	28.8 0.2
30.1	19.34 .12	49.7 0.8	58.60 .12	63.7 1.0	37.92 .12	0.9 −0.1	17.69 .13	28.5 0.2
Apr. 9.1	19.23 −.08	48.9 −0.8	58.49 −.09	62.6 +1.3	37.81 −.09	0.8 0.0	17.58 −.10	28.3 −0.2
19.1	19.18 −.03	48.1 0.8	58.42 −.05	61.1 1.6	37.74 −.05	0.8 +0.1	17.50 .06	28.2 −0.1
29.1	19.17 +.02	47.3 0.7	58.40 .00	59.5 1.8	37.72 .00	1.0 0.2	17.46 −.01	28.1 0.0
May 9.0	19.22 .08	46.7 0.6	58.41 +.04	57.6 2.0	37.73 +.04	1.2 0.3	17.47 +.04	28.2 +0.1
19.0	19.32 .13	46.2 0.4	58.48 .09	55.5 2.2	37.80 .09	1.6 0.5	17.53 .08	28.4 0.3
29.0	19.47 +.18	45.9 −0.2	58.59 +.13	53.3 +2.3	37.91 +.13	2.2 +0.6	17.64 +.13	28.7 +0.4
June 8.0	19.67 .22	45.8 0.0	58.74 .17	50.9 2.4	38.06 .18	2.9 0.8	17.79 .17	29.2 0.5
17.9	19.92 .26	45.9 +0.2	58.93 .21	48.5 2.4	38.26 .22	3.8 0.9	17.98 .21	29.8 0.7
27.9	20.20 .29	46.2 0.4	59.16 .24	46.2 2.3	38.49 .25	4.8 1.0	18.21 .24	30.6 0.8
July 7.9	20.51 .32	46.7 0.6	59.41 .27	43.9 2.2	38.76 .27	5.8 1.1	18.47 .27	31.4 0.9
17.8	20.84 +.34	47.4 +0.8	59.69 +.29	41.7 +2.1	39.04 +.29	7.0 +1.2	18.76 +.29	32.4 +1.0
27.8	21.19 .35	48.2 0.9	59.98 .30	39.7 1.9	39.34 .31	8.2 1.2	19.06 .31	33.4 1.0
Aug. 6.8	21.55 .36	49.2 1.1	60.29 .30	38.0 1.6	39.65 .31	9.4 1.2	19.38 .32	34.4 1.0
16.8	21.91 .35	50.3 1.2	60.59 .30	36.6 1.2	39.97 .32	10.5 1.1	19.70 .32	35.4 1.0
26.7	22.26 .35	51.5 1.2	60.89 .30	35.5 0.9	40.29 .31	11.5 1.0	20.02 .32	36.4 0.9
Sept. 5.7	22.60 +.34	52.8 +1.3	61.19 +.29	34.8 +0.5	40.60 +.30	12.5 +0.9	20.34 +.31	37.3 +0.8
15.7	22.93 .32	54.0 1.3	61.47 .27	34.6 +0.1	40.90 .29	13.3 0.7	20.65 .30	38.1 0.7
25.7	23.24 .30	55.3 1.3	61.73 .25	34.7 −0.3	41.19 .28	14.0 0.6	20.95 .29	38.8 0.6
Oct. 5.6	23.52 .27	56.6 1.2	61.98 .23	35.2 0.7	41.46 .26	14.5 0.4	21.24 .27	39.4 0.5
15.6	23.78 .25	57.8 1.2	62.20 .21	36.1 1.0	41.72 .24	14.8 0.3	21.50 .25	39.9 0.4
25.6	24.02 +.22	59.0 +1.1	62.40 +.18	37.3 −1.3	41.95 +.22	15.1 +0.1	21.74 +.23	40.2 +0.3
Nov. 4.5	24.22 .19	60.1 1.1	62.56 .15	38.7 1.5	42.15 .19	15.2 0.0	21.96 .20	40.5 0.2
14.5	24.40 .15	61.2 1.0	62.70 .12	40.3 1.7	42.33 .16	15.1 −0.1	22.16 .17	40.6 0.1
24.5	24.53 .11	62.2 1.0	62.80 .09	42.1 1.8	42.48 .13	15.0 0.1	22.32 .14	40.7 +0.1
Dec. 4.5	24.62 .07	63.1 0.9	62.87 .05	43.8 1.8	42.59 .09	14.9 0.2	22.44 .10	40.8 0.0
14.4	24.68 +.03	63.9 +0.8	62.90 +.01	45.6 −1.7	42.66 +.06	14.7 −0.2	22.52 +.06	40.8 0.0
24.4	24.69 −.01	64.6 0.7	62.90 −.02	47.2 1.6	42.70 +.02	14.5 0.2	22.57 +.02	40.8 0.0
34.4	24.65 −.05	65.2 +0.5	62.86 −.06	48.7 −1.4	42.70 −.02	14.3 −0.2	22.57 −.02	40.8 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Tauri. (*Aldebaran.*)		*α* Camelopardalis.		*ι* Aurigæ.		11 Orionis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 4 29	° ′ +16 17	h m 4 43	° ′ +66 9	h m 4 49	° ′ +32 59	h m 4 58	° ′ +15 15
	s	″	s	″	s	″	s	″
Jan. 0.4	43.65 .00	34.2 −0.1	19.82 −.06	41.1 +2.4	57.97 +.02	47.2 +0.8	24.18 +.02	15.5 −0.3
10.4	43.63 −.04	34.1 0.2	19.71 .16	43.4 2.2	57.96 −.03	47.9 0.7	24.18 −.02	15.2 0.2
20.4	43.57 .08	33.9 0.2	19.50 .25	45.5 1.9	57.91 .08	48.6 0.6	24.14 .06	15.0 0.2
30.3	43.47 .11	33.7 0.2	19.21 .33	47.1 1.5	57.81 .12	49.1 0.4	24.07 .10	14.9 0.2
Feb. 9.3	43.34 .14	33.5 0.2	18.84 .39	48.4 1.0	57.67 .15	49.4 0.3	23.95 .13	14.7 0.1
19.3	43.19 −.16	33.3 −0.2	18.42 −.43	49.2 +0.5	57.50 −.18	49.6 +0.1	23.81 −.15	14.6 −0.1
29.2	43.03 .17	33.2 0.2	17.97 .46	49.5 +0.1	57.31 .19	49.6 −0.1	23.65 .16	14.4 0.1
Mar. 10.2	42.86 .16	33.0 0.2	17.51 .45	49.3 −0.4	57.11 .20	49.5 0.2	23.48 .17	14.3 0.1
20.2	42.70 .15	32.8 0.2	17.07 .42	48.6 0.9	56.92 .18	49.1 0.4	23.31 .16	14.2 −0.1
30.2	42.55 .13	32.6 0.1	16.67 .38	47.5 1.3	56.74 .16	48.7 0.5	23.16 .14	14.2 0.0
Apr. 9.1	42.44 −.10	32.5 −0.1	16.32 −.32	46.0 −1.6	56.60 −.13	48.1 −0.6	23.02 −.12	14.2 0.0
19.1	42.36 .06	32.5 0.0	16.05 .23	44.2 1.9	56.48 .09	47.4 0.7	22.92 .08	14.2 +0.1
29.1	42.31 −.02	32.6 +0.1	15.87 .13	42.2 2.1	56.42 −.04	46.7 0.7	22.86 −.04	14.4 0.2
May 9.1	42.32 +.03	32.8 0.3	15.79 −.03	40.0 2.2	56.40 +.01	46.0 0.7	22.83 .00	14.6 0.3
19.0	42.37 .07	33.1 0.4	15.81 +.07	37.7 2.2	56.44 .06	45.4 0.6	22.86 +.05	15.0 0.4
29.0	42.46 +.12	33.6 +0.5	15.93 +.17	35.5 −2.2	56.52 +.11	44.8 −0.5	22.93 +.09	15.4 +0.5
June 8.0	42.60 .16	34.2 0.7	16.16 .27	33.4 2.1	56.66 .16	44.4 0.4	23.04 .13	16.0 0.6
17.9	42.79 .20	34.9 0.8	16.48 .36	31.4 1.9	56.85 .21	44.1 0.2	23.20 .17	16.7 0.7
27.9	43.01 .24	35.8 0.9	16.89 .45	29.6 1.7	57.08 .25	43.9 −0.1	23.39 .21	17.5 0.8
July 7.9	43.26 .26	36.7 1.0	17.38 .52	28.0 1.4	57.35 .28	43.9 +0.1	23.62 .24	18.4 0.9
17.9	43.54 +.29	37.7 +1.0	17.93 +.58	26.8 −1.1	57.65 +.31	44.1 +0.2	23.87 +.27	19.3 +0.9
27.8	43.83 .30	38.8 1.1	18.53 .62	25.9 0.7	57.97 .33	44.3 0.3	24.15 .29	20.2 0.9
Aug. 6.8	44.14 .31	39.8 1.0	19.18 .65	25.4 −0.4	58.31 .35	44.7 0.4	24.45 .30	21.2 0.9
16.8	44.46 .32	40.9 1.0	19.84 .68	25.2 0.0	58.66 .36	45.2 0.5	24.75 .31	22.1 0.8
26.8	44.78 .32	41.8 0.9	20.53 .69	25.4 +0.4	59.02 .36	45.8 0.6	25.06 .31	22.9 0.7
Sept. 5.7	45.09 +.31	42.7 +0.8	21.22 +.69	25.9 +0.7	59.38 +.36	46.5 +0.7	25.38 +.31	23.6 +0.6
15.7	45.40 .30	43.4 0.7	21.91 .68	26.8 1.0	59.74 .35	47.2 0.7	25.69 .31	24.1 0.5
25.7	45.69 .29	44.0 0.5	22.57 .66	28.0 1.4	60.08 .34	48.0 0.8	25.99 .30	24.5 0.4
Oct. 5.6	45.98 .27	44.5 0.4	23.22 .62	29.5 1.7	60.42 .33	48.7 0.8	26.29 .29	24.8 0.2
15.6	46.24 .25	44.8 0.2	23.82 .58	31.3 1.9	60.74 .31	49.5 0.8	26.57 .27	25.0 +0.1
25.6	46.49 +.23	45.0 +0.1	24.38 +.53	33.3 +2.2	61.03 +.29	50.3 +0.8	26.84 +.25	24.9 0.0
Nov. 4.6	46.71 .21	45.0 0.0	24.87 .46	35.6 2.4	61.31 .26	51.1 0.8	27.08 .23	24.8 −0.1
14.5	46.91 .18	45.0 −0.1	25.30 .39	38.1 2.6	61.55 .23	51.9 0.8	27.30 .21	24.6 0.2
24.5	47 07 .15	44.9 0.2	25.65 .31	40.7 2.7	61.76 .19	52.8 0.8	27.50 .18	24.3 0.3
Dec. 4.5	47.20 .11	44.8 0.2	25.91 .21	43.4 2.7	61.94 .15	53.6 0.8	27.65 .14	24.0 0.3
14.5	47.29 +.07	44.6 −0.2	26.08 +.11	46.1 +2.6	62.06 +.10	54.4 +0.8	27.77 +.10	23.7 −0.3
24.4	47.34 +.03	44.4 0.2	26.14 +.01	48.7 2.5	62.14 +.05	55.2 0.8	27.85 .06	23.4 0.3
34.4	47.35 −.01	44.2 −0.2	26.10 −.09	51.1 +2.3	62.17 .00	56.0 +0.7	27.88 +.01	23.2 −0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Aurigæ. (*Capella.*)		β Orionis. (*Rigel.*)		β Tauri.		Groombridge 966	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 5 8	+45° 53′	h m 5 9	− 8° 19′	h m 5 19	+28° 31′	h m 5 25	+74° 58′
	s	″	s	″	s	″	s	″
Jan. 0.4	43.21 +.03	22.9 +1.5	21.36 +.02	35.6 −1.6	28.30 +.05	2.1 +0.5	20.25 +.01	25.7 +2.9
10.4	43.21 −.03	24.4 1.4	21.36 −.02	37.1 1.4	28.33 .00	2.6 0.5	20.18 −.15	28.5 2.7
20.4	43.16 .08	25.7 1.2	21.32 .06	38.4 1.2	28.30 −.05	3.1 0.4	19.94 .31	31.1 2.5
30.4	43.04 .14	26.8 1 0	21.23 .10	39.5 1.0	28.23 .09	3.5 0.4	19.55 .46	33.4 2.1
Feb. 9.3	42.88 .18	27.6 0.7	21.12 .13	40.3 0.7	28.12 .13	3.8 0.3	19.03 .57	35.3 1.7
19.3	42.68 −.22	28.3 +0.5	20.97 −.15	40.9 −0.5	27.97 −.16	4.1 +0.2	18.41 −.66	36.8 +1.2
29.3	42.45 .24	28.6 +0.2	20.80 .17	41.3 −0.2	27.80 .18	4.2 +0.1	17.71 .72	37.7 0.7
Mar. 10.2	42.20 .24	28.6 −0.1	20.63 .18	41.4 0.0	27.61 .19	4.2 −0.1	16.97 .74	38.1 +0.1
20.2	41.96 .23	28.3 0.4	20.46 .17	41.2 +0.3	27.42 .18	4.1 0.2	16.23 .73	37.9 −0.4
30.2	41.73 .21	27.7 0.7	20.29 .15	40.8 0.5	27.25 .17	3.9 0.3	15.52 .68	37.2 0.9
Apr. 9.2	41.53 −.18	26.9 −0.9	20.14 −.13	40.2 +0.8	27.09 −.14	3.6 −0.4	14.87 −.60	36.1 −1.4
19.1	41.37 .13	25.9 1.1	20.03 .10	39.2 1.0	26.97 .10	3.2 0.4	14.32 .50	34.5 1.8
29.1	41.27 .08	24.7 1.2	19.94 .06	38.1 1.2	26.88 .06	2.8 0.4	13.89 .37	32.5 2.1
May 9.1	41.22 −.02	23.4 1.3	19.90 −.02	36.8 1.4	26.84 −.02	2.3 0.4	13.59 .22	30.2 2.3
19.1	41.23 +.04	22.1 1.3	19.90 +.02	35.2 1.6	26.84 +.03	1.9 0.4	13.44 −.07	27.8 2.5
29.0	41.30 +.10	20.8 −1.3	19.94 +.06	33.5 +1.8	26.90 +.08	1.6 −0.3	13 45 +.08	25.2 −2.6
June 8.0	41.43 .16	19.6 1.2	20.02 .10	31.6 1.9	27.00 .13	1.3 0.2	13.61 .23	22.6 2.6
18.0	41 62 .22	18.4 1.0	20.15 :14	29.7 2.0	27.16 .17	1.1 −0.1	13.92 .38	20.1 2.5
27.9	41.87 .27	17.4 0.9	20.31 .18	27.7 2.0	27.35 .21	1.1 0.0	14.38 .52	17.7 2.3
July 7.9	42.16 .31	16.6 0.7	20.51 .21	25.7 2.0	27.58 .25	1.1 +0.1	14.96 .64	15.5 2.1
17.9	42.49 +.35	16.0 −0.5	20.74 +.24	23.7 +1.9	27.85 +.28	1.3 +0.2	15.67 +.75	13.5 −1.8
27.9	42.85 .38	15.6 0.3	20.99 .26	21.9 1 7	28.14 .30	1.5 0.3	16.47 .84	11.8 1.5
Aug. 6.8	43.24 .40	15.3 −0.1	21.26 .28	20 2 1.5	28.45 .32	1.8 0.3	17.36 .92	10.4 1.2
16.8	43.65 .41	15.3 +0.1	21.54 .29	18.8 1.3	28.77 .33	2.2 0.4	18.32 .98	9.4 0.8
26.8	44.07 .42	15.4 0 2	21.83 .29	17.7 1.0	29.11 .34	2.6 0.4	19.33 1.02	8.8 −0.4
Sept. 5.8	44.49 +.42	15.8 +0.4	22.12 +.30	16.9 +0.6	29.45 +.34	3.0 +0.4	20.37+1.05	8.6 0.0
15.7	44.92 .42	16.3 0.6	22.42 .29	16.5 +0.3	29.80 .34	3.4 0.4	21.43 1.06	8.8 +0.4
25.7	45.34 .41	16.9 0.7	22.71 .29	16.4 −0.1	30.13 .34	3.8 0.4	22.48 1.04	9.4 0.8
Oct. 5.7	45.74 .40	17.8 0.9	22.99 .28	16.7 0.5	30.47 .33	4.2 0.4	23.51 1.01	10.4 1.2
15.6	46.14 .38	18.7 1.0	23.26 .26	17.4 0.8	30.79 .32	4.6 0.4	24.51 .97	11.7 1.5
25.6	46.51 +.36	19.8 +1.2	23.52 +.24	18.3 −1.1	31.10 +.30	5.0 +0.4	25.44 +.90	13.4 +1.9
Nov. 4.6	46.85 .33	21.0 1.3	23.75 .22	19.6 1.4	31.39 .28	5.4 0.4	26.30 .81	15.5 2.2
14.6	47.16 .29	22.4 1.4	23.96 .19	21.0 1.6	31.65 .25	5.8 0.4	27.07 .70	17.8 2.5
24.5	47.43 .24	23.8 1.5	24.14 .16	22.7 1.7	31.88 .22	6.2 0.4	27.72 .58	20.5 2.7
Dec. 4.5	47.65 .19	25.3 1.5	24.29 .13	24.4 1.7	32.08 .18	6.6 0.4	28.23 .44	23.3 2.9
14.5	47.82 +.14	26.9 +1.5	24.40 +.09	26.1 −1.7	32.24 +.13	7.0 +0.5	28.59 +.28	26.2 +3.0
24.5	47.93 .08	28.4 1.5	24.47 +.05	27.8 1.6	32.35 .08	7.5 0.5	28.80 +.12	29.2 2.9
34.4	47.98 +.02	29.9 +1.4	24.49 .00	29.4 −1.5	32.41 +.03	8.0 +0.5	28.83 −.04	32.1 +2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON

Mean Solar Date.	*δ* Orionis.		*α* Leporis.		*ε* Orionis.		*α* Columbæ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 5 26	° ′ − 0 22	h m 5 27	° ′ −17 53	h m 5 30	° ′ − 1 15	h m 5 35	° ′ −34 7
	s	″	s	″	s	″	s	″
Jan. 0.4	29.82 +.04	43.8 −1.2	58.69 +.02	59.1 −2.1	44.48 +.04	74.2 −1.3	45.39 .00	55.4 −2.8
10.4	29.84 .00	45.0 1.1	58.69 −.02	61.1 1.9	44.50 .00	75.4 1.1	45.37 −.05	58.0 2.5
20.4	29.82 −.04	46.0 0.9	58.64 .06	62.9 1.6	44.48 −.04	76.5 1.0	45.30 .10	60.4 2.2
30.4	29.75 .08	46.8 0.7	58.56 .10	64.4 1.4	44.42 .08	77.4 0.8	45.18 .14	62.4 1.8
Feb. 9.3	29.65 .12	47.5 0.6	58.44 .14	65.6 1.1	44.32 .11	78.1 0.6	45.01 .18	64.1 1.4
19.3	29.52 −.14	48.0 −0.4	58.28 −.17	66.5 −0.7	44.18 −.14	78.6 −0.4	44.82 −.21	65.3 −1.0
29.3	29.36 .16	48.3 −0.2	58.11 .18	67.0 −0.4	44.03 .16	79.0 −0.2	44.60 .23	66.1 0.6
Mar. 10.3	29.20 .17	48.4 0.0	57.92 .19	67.2 0.0	43.86 .17	79.1 0.0	44.36 .24	66.4 −0.1
20.2	29.02 .17	48.4 +0.1	57.73 .19	67.1 +0.3	43.69 .17	79.0 +0.1	44.13 .23	66.3 +0.4
30.2	28.86 .16	48.2 0.3	57.54 .18	66.6 0.6	43.53 .16	78.8 0.3	43.89 .22	65.7 0.8
Apr. 9.2	28.71 −.14	47.7 +0.5	57.38 −.16	65.8 +0.9	43.38 −.14	78.4 +0.5	43.68 −.20	64.7 +1.2
19.2	28.59 .11	47.1 0.7	57.23 .13	64.7 1.2	43.25 .11	77.8 0.7	43.49 .17	63.3 1.6
29.1	28.50 .07	46.4 0.9	57.12 .09	63.4 1.5	43.16 .07	77.0 0.9	43.34 .13	61.5 1.9
May 9.1	28.45 −.03	45.4 1.0	57.05 .05	61.7 1.8	43.11 −.03	76.0 1.1	43.22 .09	59.4 2.2
19.1	28.44 +.01	44.3 1.2	57.02 −.01	59.8 2.0	43.09 +.01	74.9 1.2	43.15 −.05	57.0 2.5
29.0	28.48 +.05	43.1 +1.3	57.04 +.04	57.7 +2.2	43.12 +.05	73.6 +1.4	43.13 .00	54.3 +2.7
June 8.0	28.55 .10	41.7 1.4	57.10 .08	55.4 2.3	43.19 .09	72.2 1.5	43.16 +.05	51.5 2.9
18.0	28.67 .14	40.2 1.5	57.20 .12	53.1 2.4	43.31 .13	70.6 1.6	43.23 .10	48.5 3.0
28.0	28.83 .17	38.6 1.6	57.34 .16	50.7 2.4	43.46 .17	69.0 1.6	43.35 .14	45.5 3.0
July 7.9	29.02 .20	37.1 1.6	57.51 .19	48.3 2.3	43.64 .20	67.4 1.6	43.52 .18	42.6 2.9
17.9	29.23 +.23	35.5 +1.5	57.72 +.22	46.0 +2.2	43.86 +.23	65.8 +1.5	43.72 +.22	39.8 +2.7
27.9	29.48 .25	34.0 1.4	57.96 .25	43.9 2.0	44.10 .25	64.4 1.4	43.95 .25	37.1 2.5
Aug. 6.8	29.74 .27	32.7 1.3	58.21 .27	41.9 1.8	44.35 .27	63.0 1.3	44.22 .28	34.8 2.2
16.8	30.02 .28	31.5 1.1	58.49 .28	40.3 1.5	44.63 .28	61.8 1.1	44.51 .30	32.8 1.8
26.8	30.30 .29	30.5 0.9	58.78 .29	39.0 1.1	44.92 .29	60.8 0.9	44.81 .31	31.3 1.3
Sept. 5.8	30.60 +.29	29.8 +0.6	59.07 +.30	38.1 +0.7	45.21 +.29	60.0 +0.6	45.13 +.32	30.2 +0.8
15.7	30.89 .30	29.3 +0.3	59.37 .30	37.7 +0.2	45.50 .30	59.6 +0.3	45.46 .33	29.7 +0.2
25.7	31.19 .29	29.2 0.0	59.67 .29	37.7 −0.2	45.80 .29	59.5 0.0	45.78 .32	29.8 −0.3
Oct. 5.7	31.48 .28	29.3 −0.3	59.96 .29	38.1 0.7	46.09 .28	59.7 −0.3	46.10 .31	30.4 0.9
15.7	31.76 .27	29.8 0.6	60.25 .28	39.0 1.1	46.37 .27	60.1 0.6	46.41 .30	31.6 1.4
25.6	32.03 +.26	30.5 −0.8	60.51 +.26	40.2 −1.5	46.64 +.26	60.9 −0.9	46.70 +.28	33.2 −1.9
Nov. 4.6	32.28 .24	31.5 1.0	60.76 .24	41.9 1.8	46.89 .24	61.9 1.1	46.97 .25	35.3 2.3
14.6	32.50 .22	32.6 1.2	60.98 .21	43.8 2.0	47.12 .22	63.1 1.2	47.20 .22	37.8 2.6
24.5	32.71 .19	33.9 1.3	61.18 .18	45.9 2.2	47.33 .19	64.4 1.3	47.41 .18	40.5 2.8
Dec. 4.5	32.88 .15	35.2 1.3	61.34 .14	48.2 2.3	47.50 .16	65.8 1.4	47.56 .14	43.4 2.9
14.5	33.01 +.11	36.5 −1.3	61.46 +.10	50.4 −2.3	47.64 +.12	67.2 −1.4	47.68 +.09	46.4 −2.9
24.5	33.10 .07	37.8 1.2	61.53 .05	52.7 2.2	47.73 .08	68.6 1.3	47.74 +.04	49.3 2.8
34.4	33.15 +.03	39.1 −1.1	61.56 +.01	54.7 −2.0	47.79 +.03	69.9 −1.2	47.75 −.01	52.1 −2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Orionis.		*ν* Orionis.		22 Camelop. (H.)		*μ* Geminorum.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 5 49	° ′ + 7 23	h m 6 1	° ′ +14 46	h m 6 6	° ′ +69 21	h m 6 16	° ′ +22 34
	s	″	s	″	s	″	s	″
Jan. 0.5	19.96 +.07	14.8 −0.8	24.88 +.09	55.2 −0.4	58.54 +.15	31.3 +2.7	26.16 +.11	10.9 0.0
10.4	20.01 +.02	14.0 0.7	24.95 +.04	54.9 0.3	58.63 +.02	34.0 2.6	26.24 .06	11.0 +0.1
20.4	20.01 −.02	13.4 0.6	24.96 −.01	54.6 0.2	58.58 −.10	36.6 2.5	26.27 +.01	11.1 0.2
30.4	19.96 .06	12.8 0.5	24.93 .05	54.4 0.2	58.42 .22	38.9 2.3	26.25 −.04	11.3 0.2
Feb. 9.4	19.88 .10	12.4 0.3	24.85 .09	54.3 −0.1	58.14 .32	41.0 2.0	26.19 .09	11.6 0.3
19.3	19.76 −.13	12.1 −0.2	24.74 −.13	54.2 0.0	57.76 −.41	42.8 +1.6	26.08 −.13	11.8 +0.2
29.3	19.61 .15	11.9 −0.1	24.60 .15	54.2 0.0	57.31 .48	44.1 1.1	25.94 .16	12.1 0.2
Mar. 10.3	19.45 .16	11.8 0.0	24.43 .17	54.3 0.0	56.81 .52	45.0 0.6	25.77 .17	12.3 0.2
20.3	19.28 .17	11.9 +0.1	24.26 .17	54.3 +0.1	56.28 .53	45.4 +0.1	25.60 .18	12.4 0.1
30.2	19.12 .16	12.0 0.2	24.09 .16	54.4 0.1	55.76 .51	45.2 −0.4	25.42 .17	12.5 +0.1
Apr. 9.2	18.96 −.14	12.2 +0.3	23.94 −.15	54.5 +0.1	55.26 −.47	44.6 −0.8	25.25 −.15	12.6 0.0
19.2	18.83 .11	12.6 0.4	23.80 .12	54.6 0.2	54.82 .41	43.5 1.2	25.10 .13	12.6 0.0
29.1	18.74 .08	13.0 0.5	23.69 .09	54.8 0.2	54.45 .33	42.0 1.6	24.99 .10	12.5 0.0
May 9.1	18.67 −.04	13.6 0.6	23.62 .05	55.1 0.3	54.17 .23	40.2 1.9	24.90 .06	12.4 −0.1
19.1	18.65 .00	14.2 0.7	23.60 −.01	55.4 0.3	53.98 .12	38.1 2.2	24.86 −.02	12.4 −0.1
29.1	18.67 +.04	15.0 +0.8	23.61 +.03	55.7 +0.4	53.91 −.01	35.9 −2.3	24.86 +.02	12.3 0.0
June 8.0	18.73 .08	15.9 0.9	23.66 .08	56.2 0.5	53.95 +.10	33.5 2.4	24.91 .07	12.3 0.0
18.0	18.83 .12	16.9 1.0	23.76 .12	56.7 0.5	54.10 .21	31.1 2.4	25.00 .11	12.4 0.0
28.0	18.98 .16	17.9 1.0	23.90 .15	57.3 0.6	54.36 .31	28.7 2.3	25.13 .15	12.4 +0.1
July 8.0	19.15 .19	19.0 1.1	24.07 .19	57.9 0.6	54.72 .40	26.4 2.2	25.30 .18	12.5 0.1
17.9	19.36 +.22	20.1 +1.1	24.28 +.22	58.6 +0.7	55.18 +.49	24.2 −2.0	25.50 +.21	12.7 +0.2
27.9	19.59 .24	21.2 1.0	24.51 .25	59.2 0.6	55.71 .57	22.3 1.8	25.74 .24	12.8 0.2
Aug. 6.9	19.85 .26	22.2 0.9	24.77 .27	59.8 0.6	56.32 .64	20.6 1.6	26.00 .27	13.0 0.2
16.8	20.12 .28	23.0 0.8	25.04 .28	60.4 0.5	56.99 .69	19.2 1.3	26.28 .29	13.1 0.1
26.8	20.41 .29	23.8 0.6	25.33 .30	60.9 0.4	57.71 .73	18.0 1.0	26.57 .30	13.3 +0.1
Sept. 5.8	20.70 +.30	24.3 +0.4	25.64 +.31	61.2 +0.3	58.47 +.77	17.2 −0.6	26.88 +.31	13.3 0.0
15.8	21.00 .30	24.7 +0.2	25.94 .31	61.4 +0.1	59.25 .79	16.8 −0.3	27.20 .32	13.3 0.0
25.7	21.30 .30	24.8 0.0	26.26 .31	61.5 0.0	60.05 .80	16.7 +0.1	27.53 .33	13.3 −0.1
Oct. 5.7	21.60 .30	24.7 −0.2	26.57 .31	61.4 −0.2	60.85 .79	16.9 0.4	27.86 .33	13.1 0.2
15.7	21.90 .29	24.3 0.4	26.88 .30	61.1 0.3	61.63 .78	17.6 0.8	28.19 .33	12.9 0.2
25.7	22.18 +.28	23.8 −0.6	27.18 +.29	60.8 −0.4	62.40 +.74	18.6 +1.1	28.51 +.32	12.7 −0.3
Nov. 4.6	22.46 .26	23.1 0.8	27.47 .28	60.3 0.5	63.12 .69	19.9 1.5	28.82 .30	12.4 0.3
14.6	22.71 .24	22.3 0.9	27.74 .26	59.7 0.6	63.79 .63	21.6 1.8	29.12 .28	12.1 0.3
24.6	22.94 .21	21.3 0.9	27.99 .23	59.1 0.6	64.39 .55	23.6 2.1	29.40 .26	11.8 0.3
Dec. 4.5	23.14 .18	20.4 1.0	28.21 .20	58.5 0.6	64.90 .46	25.9 2.3	29.64 .23	11.6 0.2
14.5	23.30 +.14	19.4 −1.0	28.39 +.16	58.0 −0.5	65.30 +.35	28.3 +2.5	29.85 +.19	11.4 −0.1
24.5	23.42 .10	18.5 0.9	28.53 .12	57.4 0.5	65.60 .23	30.9 2.6	30.01 .14	11.3 0.0
34.5	23.50 +.05	17.6 −0.8	28.62 +.07	57.0 −0.4	65.76 +.10	33.6 +2.7	30.13 +.09	11.3 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*a* Argûs. (*Canopus*.)		*γ* Geminorum.		*a* Canis Majoris. (*Sirius*.)		*ε* Canis Majoris.	
	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *South*.
	$6^{h}\ 21^{m}$	$-52^{\circ}\ 37'$	$6^{h}\ 31^{m}$	$+16^{\circ}\ 29'$	$6^{h}\ 40^{m}$	$-16^{\circ}\ 33'$	$6^{h}\ 54^{m}$	$-28^{\circ}\ 49'$
	s	″	s	″	s	″	s	″
Jan. 0.5	35.19 +.01	69.0 −3.5	28.89 +.12	31.7 −0.4	24.19 +.10	61.4 −2.4	23.79 +.10	26.5 −2.9
10.5	35.16 −.06	72.4 3.3	28.99 .07	31.4 0.3	24.26 +.05	63.7 2.2	23.86 +.05	29.4 2.8
20.4	35.07 .13	75.5 3.0	29.03 +.02	31.2 0.2	24.28 .00	65.8 2.0	23.88 −.01	32.0 2.6
30.4	34.91 .19	78.3 2.6	29.03 −.03	31.0 −0.1	24.26 −.05	67.7 1.7	23.85 −.06	34.5 2.3
Feb. 9.4	34.69 .25	80.8 2.2	28.97 .07	31.0 0.0	24.18 .09	69.3 1.4	23.76 .10	36.6 2.0
19.4	34.42 −.29	82.7 −1.7	28.88 −.11	31.0 +0.1	24.07 −.13	70.6 −1.1	23.64 −.14	38.4 −1.6
29.3	34.10 .32	84.2 1.2	28.75 .14	31.1 0.1	23.93 .16	71.6 0.8	23.47 .18	39.8 1.2
Mar. 10.3	33.76 .35	85.2 0.7	28.59 .16	31.2 0.1	23.76 .18	72.2 0.5	23.28 .20	40.8 0.8
20.3	33.40 .36	85.6 −0.2	28.43 .17	31.4 0.2	23.57 .19	72.6 −0.2	23.07 .21	41.4 −0.4
30.3	33.05 .35	85.6 +0.3	28.25 .17	31.5 0.2	23.38 .18	72.6 +0.2	22.86 .21	41.6 0.0
Apr. 9.2	32.70 −.34	85.0 +0.8	28.09 −.16	31.7 +0.2	23.20 −.17	72.3 +0.5	22.65 −.20	41.4 +0.4
19.2	32.37 .31	83.9 1.3	27.94 .14	31.8 0.2	23.04 .16	71.7 0.8	22.45 .19	40.8 0.8
29.2	32.08 .27	82.4 1.8	27.82 .11	32.0 0.2	22.89 .13	70.7 1.1	22.27 .16	39.8 1.2
May 9.1	31.83 .23	80.4 2.2	27.73 .07	32.2 0.2	22.77 .10	69.6 1.3	22.12 .13	38.4 1.5
19.1	31.63 .18	78.0 2.5	27.68 −.03	32.4 0.3	22.69 .07	68.1 1.5	22.00 .10	36.8 1.8
29.1	31.48 −.12	75.3 +2.8	27.67 +.01	32.7 +0.3	22.64 −.03	66.5 +1.7	21.92 −.06	34.8 +2.1
June 8.1	31.40 −.06	72.3 3.0	27.70 .05	33.0 0.3	22.64 +.01	64.6 1.9	21.88 −.02	32.6 2.3
18.0	31.37 .00	69.1 3.2	27.77 .09	33.3 0.4	22.67 .05	62.6 2.0	21.88 +.02	30.2 2.5
28.0	31.40 +.06	65.8 3.3	27.88 .13	33.7 0.4	22.74 .09	60.5 2.1	21.93 .06	27.6 2.6
July 8.0	31.50 .12	62.5 3.3	28.03 .16	34.1 0.4	22.85 .13	58.4 2.1	22.01 .10	25.0 2.6
18.0	31.65 +.18	59.3 +3.2	28.21 +.19	34.5 +0.4	23.00 +.16	56.3 +2.0	22.13 +.14	22.4 +2.5
27.9	31.86 .23	56.2 3.0	28.42 .22	35.0 0.4	23.17 .19	54.3 1.9	22.29 .17	19.9 2.4
Aug. 6.9	32.11 .28	53.3 2.7	28.66 .25	35.3 0.3	23.37 .22	52.4 1.7	22.48 .20	17.5 2.2
16.9	32.42 .32	50.8 2.3	28.92 .27	35.7 0.3	23.60 .24	50.8 1.5	22.70 .23	15.4 1.9
26.8	32.76 .36	48.8 1.8	29.20 .29	35.9 0.2	23.85 .26	49.4 1.2	22.95 .26	13.7 1.6
Sept. 5.8	33.13 +.38	47.3 +1.2	29.49 +.30	36.0 +0.1	24.12 +.27	48.4 +0.8	23.23 +.28	12.3 +1.2
15.8	33.52 .40	46.3 +0.6	29.79 .31	36.0 −0.1	24.40 .28	47.8 +0.4	23.52 .30	11.4 0.7
25.8	33.93 .41	46.0 0.0	30.10 .32	35.9 0.2	24.69 .29	47.6 0.0	23.82 .31	11.0 +0.1
Oct. 5.7	34.34 .41	46.2 −0.6	30.42 .32	35.6 0.3	24.99 .30	47.9 −0.5	24.14 .32	11.1 −0.4
15.7	34.75 .40	47.2 1.2	30.74 .32	35.2 0.4	25.29 .30	48.6 0.9	24.46 .32	11.8 0.9
25.7	35.14 +.38	48.8 −1.8	31.06 +.31	34.7 −0.5	25.59 +.29	49.8 −1.3	24.78 +.31	13.0 −1.4
Nov. 4.7	35.50 .35	50.9 2.4	31.36 .30	34.1 0.6	25.88 .28	51.3 1.7	25.08 .30	14.7 1.9
14.6	35.83 .31	53.5 2.8	31.66 .28	33.5 0.7	26.16 .26	53.2 2.0	25.38 .28	16.8 2.3
24.6	36.11 .26	56.5 3.1	31.94 .26	32.8 0.7	26.41 .24	55.3 2.2	25.65 .25	19.2 2.6
Dec. 4.6	36.34 .20	59.8 3.4	32.18 .23	32.2 0.6	26.64 .21	57.6 2.3	25.89 .22	21.9 2.8
14.5	36.50 +.13	63.3 −3.5	32.40 +.19	31.6 −0.5	26.83 +.17	60.0 −2.4	26.09 +.18	24.8 −2.9
24.5	36.59 +.06	66.8 3.5	32.57 .15	31.0 0.4	26.98 .13	62.4 2.4	26.25 .13	27.8 2.9
34.5	36.61 −.01	70.3 −3.4	32.70 +.10	30.6 −0.3	27.08 +.08	64.8 −2.3	26.36 +.08	30.7 −2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Canis Majoris.		δ Geminorum.		Piazzi vii. 67.		α² Geminorum. (*Castor.*)	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 7 3	° ′ −26 12	h m 7 13	° ′ +22 10	h m 7 19	° ′ +68 40	h m 7 27	° ′ +32 7
	s	″	s	″	s	″	s	″
Jan. 0.5	60.81 +.11	73.2 −2.8	40.94 +.17	54.1 −0.2	40.89 +.34	70.1 +2.5	43.24 +.19	33.0 +0.3
10.5	60.90 .06	76.0 2.7	41.08 .12	54.0 0.0	41.17 .22	72.6 2.6	43.41 .14	33.5 0.5
20.5	60.93 +.01	78.6 2.5	41.17 .06	54.1 +0.1	41.32 +.09	75.2 2.6	43.52 .08	34.1 0.7
30.4	60.91 −.04	81.0 2.2	41.21 +.01	54.2 0.2	41.35 −.04	77.8 2.6	43.58 +.02	34.8 0.8
Feb. 9.4	60.84 .09	83.1 1.9	41.19 −.04	54.5 0.3	41.25 .16	80.3 2.4	43.57 −.03	35.7 0.8
19.4	60.73 −.13	84.8 −1.6	41.13 −.08	54.8 +0.4	41.03 −.27	82.6 +2.2	43.51 −.08	36.5 +0.8
29.4	60.58 .16	86.3 1.2	41.03 .12	55.2 0.4	40.71 .36	84.7 1.8	43.41 .12	37.3 0.8
Mar. 10.3	60.40 .18	87.3 0.8	40.89 .15	55.6 0.4	40.31 .43	86.3 1.4	43.27 .16	38.1 0.7
20.3	60.21 .20	87.9 0.5	40.73 .17	56.0 0.4	39.86 .47	87.5 1.0	43.10 .18	38.7 0.6
30.3	60.00 .21	88.2 −0.1	40.56 .17	56.3 0.3	39.36 .49	88.3 +0.5	42.91 .19	39.3 0.5
Apr. 9.2	59.80 −.20	88.0 +0.3	40.38 −.17	56.6 +0.2	38.87 −.49	88.6 0.0	42.73 −.18	39.6 +0.4
19.2	59.60 .18	87.5 0.7	40.22 .15	56.8 0.2	38.38 .46	88.3 −0.5	42.55 .17	39.8 +0.2
29.2	59.43 .16	86.6 1.1	40.08 .13	56.9 0.1	37.94 .41	87.6 0.9	42.39 .15	39.8 0.0
May 9.2	59.28 .13	85.4 1.4	39.97 .10	57.0 +0.1	37.56 .35	86.5 1.3	42.25 .12	39.7 −0.2
19.1	59.17 .10	83.9 1.7	39.89 .06	57.0 0.0	37.25 .27	85.0 1.7	42.15 .08	39.4 0.3
29.1	59.09 −.06	82.0 +2.0	39.84 −.02	57.0 0.0	37.03 −.18	83.1 −2.0	42.09 −.04	39.1 −0.4
June 8.1	59.04 −.02	79.9 2.2	39.84 .00	57.0 0.0	36.90 −.08	81.0 2.2	42.07 .00	38.6 0.5
18.1	59.04 +.02	77.7 2.3	39.87 +.05	57.0 0.0	36.87 +.02	78.6 2.4	42.09 +.04	38.0 0.6
28.0	59.08 .06	75.2 2.4	39.95 .09	56.9 0.0	36.95 .12	76.2 2.5	42.16 .08	37.4 0.7
July 8.0	59.16 .10	72.8 2.5	40.06 .13	56.9 −0.1	37.12 .22	73.6 2.5	42.26 .12	36.7 0.7
18.0	59.27 +.13	70.3 +2.5	40.21 +.16	56.8 −0.1	37.38 +.31	71.1 −2.5	42.41 +.16	36.0 −0.7
28.0	59.42 .17	67.9 2.3	40.39 .19	56.7 0.1	37.74 .40	68.6 2.4	42.59 .20	35.2 0.7
Aug. 6.9	59.60 .20	65.6 2.1	40.60 .22	56.6 0.2	38.18 .48	66.2 2.3	42.80 .23	34.5 0.8
16.9	59.82 .23	63.6 1.9	40.83 .25	56.4 0.2	38.70 .55	64.0 2.1	43.05 .26	33.7 0.8
26.9	60.06 .25	61.9 1.5	41.09 .27	56.1 0.3	39.28 .61	61.9 1.9	43.32 .28	32.9 0.8
Sept. 5.8	60.32 +.27	60.6 +1.1	41.37 +.29	55.8 −0.4	39.93 +.67	60.1 −1.7	43.61 +.30	32.1 −0.8
15.8	60.60 .29	59.7 0.6	41.67 .30	55.4 0.4	40.62 .71	58.6 1.4	43.93 .32	31.3 0.8
25.8	60.90 .30	59.3 +0.1	41.98 .32	54.9 0.5	41.35 .75	57.4 1.1	44.26 .34	30.5 0.8
Oct. 5.8	61.21 .31	59.4 −0.4	42.31 .33	54.4 0.6	42.11 .77	56.5 0.7	44.61 .36	29.7 0.8
15.7	61.52 .32	60.0 0.9	42.64 .33	53.7 0.7	42.89 .78	55.9 −0.3	44.97 .36	29.0 0.8
25.7	61.84 +.31	61.1 −1.4	42.98 +.34	53.0 −0.7	43.68 +.78	55.8 0.0	45.34 +.37	28.3 −0.7
Nov. 4.7	62.15 .30	62.7 1.8	43.31 .33	52.3 0.7	44.45 .76	56.0 +0.5	45.71 .37	27.6 0.6
14.6	62.45 .28	64.7 2.2	43.64 .32	51.5 0.7	45.20 .73	56.7 0.9	46.07 .36	27.1 0.5
24.6	62.72 .26	67.1 2.5	43.96 .30	50.9 0.6	45.91 .68	57.7 1.3	46.42 .34	26.7 0.3
Dec. 4.6	62.97 .23	69.7 2.7	44.25 .28	50.3 0.6	46.56 .61	59.2 1.7	46.75 .31	26.5 −0.1
14.6	63.18 +.19	72.5 −2.8	44.51 +.24	49.8 −0.4	47.12 +.52	61.0 +2.0	47.04 +.27	26.4 0.0
24.5	63.35 .14	75.4 2.9	44.73 .20	49.4 0.3	47.59 .41	63.2 2.2	47.29 .23	26.6 +0.2
34.5	63.47 +.09	78.2 −2.9	44.90 +.15	49.2 −0.1	47.95 +.30	65.5 +2.5	47.50 +.18	26.9 +0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Canis Minoris. (*Procyon.*)		*β* Geminorum. (*Pollux.*)		*φ* Geminorum.		3 Ursæ Majoris (H.)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 7 33	° ′ + 5 30	h m 7 38	° ′ +28 17	h m 7 46	° ′ +27 2	h m 8 2	° ′ +68 47
	s	″	s	″	s	″	s	″
Jan. 0.5	39.47 +.17	10.0 −1.3	43.04 +.20	14.5 +0.1	53.85 +.21	44.4 0.0	6.28 +.45	27.8 +2.2
10.5	39.61 .12	8.8 1.2	43.21 .15	14.7 0.3	54.03 .15	44.5 +0.2	6.66 .33	30.1 2.4
20.5	39.71 .07	7.7 1.0	43.33 .09	15.0 0.4	54.16 .10	44.8 0.3	6.93 .20	32.6 2.6
30.5	39.75 +.02	6.8 0.8	43.40 +.04	15.5 0.6	54.23 +.05	45.2 0.5	7.06 +.07	35.2 2.6
Feb. 9.4	39.75 −.03	6.0 −0.6	43.40 −.02	16.1 0.6	54.25 −.01	45.7 0.6	7.07 −.05	37.9 2.5
19.4	39.70 −.07	5.5 −0.4	43.36 −.07	16.8 +0.7	54.21 −.06	46.4 +0.7	6.95 −.18	40.4 +2.4
29.4	39.61 .11	5.1 0.3	43.26 .11	17.5 0.7	54.13 .10	47.0 0.7	6.72 .26	42.8 2.2
Mar. 10.4	39.49 .13	4.9 −0.1	43.14 .14	18.2 0.6	54.01 .14	47.7 0.6	6.39 .37	44.8 1.9
20.3	39.34 .15	4.9 0.0	42.98 .16	18.8 0.6	53.86 .16	48.3 0.6	5.98 .43	46.5 1.5
30.3	39.18 .16	5.0 +0.1	42.80 .18	19.3 0.5	53.69 .17	48.8 0.5	5.53 .47	47.7 1.0
Apr. 9.3	39.02 −.16	5.2 +0.2	42.63 −.18	19.7 +0.4	53.52 −.17	49.3 +0.4	5.04 −.49	48.5 +0.6
19.2	38.87 .15	5.4 0.3	42.45 .16	20.0 0.2	53.35 .16	49.6 0.3	4.55 .48	48.8 +0.1
29.2	38.73 .13	5.8 0.4	42.30 .14	20.2 +0.1	53.19 .14	49.8 0.2	4.08 .45	48.6 −0.4
May 9.2	38.61 .10	6.3 0.5	42.16 .12	20.2 0.0	53.06 .12	49.9 +0.1	3.65 .40	47.9 0.9
19.2	38.52 .07	6.9 0.6	42.06 .08	20.1 −0.1	52.96 .09	49.9 0.0	3.28 34	46.8 1.3
29.1	38.46 −.04	7.5 +0.7	42.00 −.05	19.9 −0.2	52.89 −.05	49.7 −0.1	2.98 −.26	45.3 −1.7
June 8.1	38.44 −.01	8.2 0.7	41.97 −.01	19.6 0.3	52.86 −.01	49.5 0.2	2.76 .17	43.4 2.0
18.1	38.45 +.03	9.0 0.8	41.98 +.03	19.2 0.4	52.86 +.03	49.2 0.3	2.63 −.08	41.2 2.2
28.0	38.49 .06	9.8 0.8	42.03 .07	18.8 0.5	52.91 .06	48.8 0.4	2.60 +.01	38.8 2.4
July 8.0	38.57 .09	10.6 0.8	42.12 .11	18.3 0.5	52.99 .10	48.4 0.4	2.66 .11	36.2 2.6
18.0	38.68 +.13	11.4 +0.8	42.25 +.15	17.8 −0.5	53.11 +.14	48.0 −0.5	2.82 +.20	33.6 −2.7
28.0	38.83 .16	12.2 0.7	42.41 .18	17.2 0.6	53.26 .17	47.4 0.5	3.07 .29	30.9 2.7
Aug. 6.9	38.99 .18	12.8 0.6	42.60 .21	16.6 0.6	53.44 .20	46.9 0.6	3.41 .38	28.2 2.7
16.9	39.19 .21	13.4 0.5	42.83 .24	16.0 0.7	53.66 .23	46.3 0.6	3.82 .46	25.6 2.6
26.9	39.41 .23	13.8 0.3	43.08 .26	15.3 0.7	53.90 .25	45.6 0.6	4.32 .53	23.1 2.4
Sept. 5.9	39.65 +.25	14.0 +0.1	43.35 +.29	14.6 −0.7	54.16 +.28	44.8 −0.7	4.88 +.59	20.7 −2.2
15.8	39.91 .27	14.0 −0.1	43.65 .31	13.8 0.8	54.45 .30	44.1 0.8	5.51 .65	18.6 2.0
25.8	40.19 .29	13.7 0.4	43.96 .32	13.0 0.8	54.76 .32	43.2 0.8	6.19 .70	16.8 1.7
Oct. 5.8	40.49 .30	13.2 0.6	44.30 .34	12.1 0.9	55.09 .33	42.3 0.9	6.91 .74	15.2 1.4
15.8	40.79 .31	12.4 0.9	44.64 .35	11.3 0.9	55.43 .35	41.4 0.9	7.67 .77	14.0 1.0
25.7	41.10 +.31	11.4 −1.1	45.00 +.36	10.4 −0.8	55.78 +.35	40.4 −0.9	8.45 +.79	13.2 −0.6
Nov. 4.7	41.41 .31	10.3 1.3	45.35 .35	9.6 0.8	56.14 .35	39.5 0.9	9.24 .78	12.8 −0.2
14.7	41.72 .30	8.9 1.4	45.71 .34	8.9 0.7	56.49 .35	38.7 0.8	10.02 .76	12.9 +0.2
24.6	42.02 .29	7.5 1.5	46.05 .33	8.2 0.6	56.84 .33	37.9 0.7	10.78 .73	13.3 0.7
Dec. 4.6	42.30 .27	5.9 1.5	46.37 .31	7.7 0.4	57.16 .31	37.3 0.5	11.49 .68	14.2 1.1
14.6	42.55 +.24	4.4 −1.5	46.66 +.27	7.4 −0.2	57.46 +.28	36.9 −0.4	12.14 +.60	15.6 +1.5
24.6	42.77 .20	3.0 1.5	46.92 .23	7.2 0.0	57.72 .24	36.6 −0.2	12.70 .51	17.3 1.9
34.5	42.94 +.15	1.6 −1.3	47.13 +.19	7.3 +0.2	57.94 +.20	36.5 0.0	13.16 +.41	19.4 +2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	15 Argûs (ρ)		η Cancri.		ε Hydræ.		ι Ursæ Majoris.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 8 2	° ′ −23 59	h m 8 26	° ′ +20 48	h m 8 41	° ′ + 6 48	h m 8 51	° ′ +48 27
	s	″	s	″	s	″	s	″
Jan. 0.6	57.31 +.18	27.1 −2.9	28.30 +.24	29.9 −0.6	3.79 +.23	57.3 −1.5	49.60 +.34	52.8 +0.8
10.6	57.47 .13	29.9 2.8	28.52 .19	29.4 0.4	4.00 .19	56.0 1.3	49.91 .28	53.7 1.1
20.5	57.57 .07	32.7 2.6	28.68 .14	29.1 −0.2	4.17 .14	54.8 1.1	50.16 .21	54.9 1.4
30.5	57.61 +.01	35.2 2.4	28.79 .08	29.1 0.0	4.28 .09	53.8 0.9	50.33 .14	56.4 1.6
Feb. 9.5	57.61 −.03	37.6 2.2	28.85 +.03	29.2 +0.2	4.34 +.04	53.0 0.7	50.43 +.07	58.1 1.7
19.4	57.56 −.07	39.6 −1.9	28.85 −.02	29.5 +0.4	4.35 −.01	52.5 −0.5	50.46 .00	59.9 +1.8
29.4	57.46 .11	41.3 1.6	28.81 .06	29.9 0.5	4.32 .05	52.1 0.3	50.42 −.07	61.8 1.8
Mar. 10.4	57.32 .15	42.7 1.2	28.72 .10	30.4 0.5	4.25 .09	51.9 −0.1	50.32 .13	63.5 1.7
20.4	57.16 .17	43.8 0.8	28.60 .13	30.9 0.5	4.14 .11	51.9 +0.1	50.17 .17	65.2 1.5
30.3	56.98 .18	44.4 0.5	28.46 .15	31.5 0.5	4.02 .13	52.1 0.2	49.98 .21	66.6 1.3
Apr. 9.3	56.80 −.19	44.8 −0.1	28.31 −.16	32.0 +0.5	3.88 −.14	52.3 +0.3	49.76 −.22	67.8 +1.0
19.3	56.61 .18	44.7 +0.2	28.15 .15	32.5 0.4	3.73 .14	52.6 0.4	49.53 .23	68.6 0.7
29.2	56.44 .17	44.3 0.6	28.00 .14	32.9 0.4	3.59 .13	53.0 0.4	49.30 .22	69.1 +0.4
May 9.2	56.27 .15	43.5 0.9	27.87 .12	33.2 0.3	3.46 .12	53.5 0.5	49.08 .21	69.3 0.0
19.2	56.14 .12	42.5 1.2	27.75 .10	33.5 0.2	3.35 .10	54.0 0.5	48.88 .18	69.1 −0.3
29.2	56.03 −.09	41.1 +1.5	27.66 −.07	33.7 +0.1	3.26 −.08	54.6 +0.6	48.72 −.15	68.6 −0.7
June 8.1	55.95 .06	39.5 1.8	27.61 .04	33.7 0.0	3.20 .05	55.2 0.6	48.59 .11	67.8 1.0
18.1	55.91 −.03	37.6 2.0	27.58 −.01	33.8 0.0	3.16 −.02	55.8 0.6	48.50 .06	66.7 1.2
28.1	55.89 .00	35.6 2.1	27.59 +.02	33.7 −0.1	3.15 +.01	56.4 0.6	48.46 −.02	65.3 1.4
July 8.1	55.92 +.04	33.4 2.2	27.63 .06	33.6 0.1	3.18 .04	57.0 0.6	48.46 +.02	63.8 1.7
18.0	55.97 +.08	31.2 +2.2	27.71 +.09	33.4 −0.2	3.23 +.07	57.6 +0.5	48.51 +.07	62.0 −1.8
28.0	56.07 .11	29.0 2.2	27.81 .12	33.1 0.3	3.31 .09	58.1 0.5	48.61 .12	60.1 1.9
Aug. 7.0	56.19 .14	26.9 2.0	27.95 .15	32.8 0.4	3.42 .12	58.5 0.4	48.75 .16	58.1 2.0
16.9	56.35 .17	24.9 1.8	28.11 .18	32.3 0.5	3.56 .15	58.8 0.2	48.93 .20	56.1 2.1
26.9	56.54 .20	23.2 1.6	28.31 .21	31.7 0.6	3.72 .18	58.9 +0.1	49.16 .25	53.9 2.1
Sept. 5.9	56.75 +.23	21.8 +1.2	28.53 +.23	31.1 −0.8	3.91 +.20	58.9 −0.1	49.42 +.29	51.8 −2.1
15.9	57.00 .26	20.8 0.8	28.77 .26	30.2 0.9	4.13 .22	58.7 0.3	49.73 .32	49.7 2.1
25.8	57.27 .28	20.2 +0.4	29.05 .28	29.3 1.0	4.37 .25	58.2 0.6	50.07 .36	47.7 2.0
Oct. 5.8	57.56 .30	20.0 −0.1	29.34 .30	28.2 1.1	4.64 .27	57.5 0.8	50.45 .39	45.7 1.9
15.8	57.87 .31	20.4 0.6	29.65 .32	27.1 1.2	4.93 .30	56.5 1.1	50.86 .42	43.9 1.7
25.8	58.19 +.32	21.3 −1.1	29.98 +.34	25.9 −1.3	5.23 +.31	55.3 −1.3	51.29 +.44	42.3 −1.5
Nov. 4.7	58.51 .32	22.6 1.6	30.32 .34	24.6 1.3	5.55 .32	53.9 1.4	51.74 .46	40.9 1.2
14.7	58.83 .32	24.4 2.0	30.67 .35	23.3 1.3	5.88 .33	52.4 1.6	52.21 .46	39.8 0.9
24.7	59.14 .31	26.6 2.3	31.02 .34	22.0 1.2	6.21 .33	50.8 1.7	52.67 .46	39.0 0.6
Dec. 4.6	59.44 .28	29.0 2.6	31.35 .32	20.9 1.1	6.53 .31	49.1 1.7	53.13 .44	38.6 −0.3
14.6	59.70 +.25	31.7 −2.8	31.66 +.30	19.9 −0.9	6.82 +.29	47.4 −1.6	53.56 +.41	38.5 +0.1
24.6	59.93 .21	34.5 2.8	31.94 .26	19.0 0.7	7.10 .26	45.8 1.6	53.96 .37	38.9 0.5
34.6	60.11 +.16	37.4 −2.9	32.19 +.22	18.3 −0.6	7.33 +.22	44.3 −1.4	54.31 +.32	39.5 +0.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	σ² Ursæ Majoris.		κ Cancri.		ι Argûs.		1 Draconis (H.)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 9 0	° ′ +67 34	h m 9 1	° ′ +11 5	h m 9 14	° ′ −58 49	h m 9 21	° ′ +81 47
	s	″	s	″	s	″	s	″
Jan. 0.6	55.27 +.54	16.9 +1.5	54.21 +.25	72.8 −1.3	12.99 +.31	1.2 −3.5	46.35+1.38	64.8 +1.9
10.6	55.77 .45	18.6 1.9	54.44 .21	71.5 1.1	13.26 .23	4.8 3.7	47.61 1.13	66.9 2.3
20.5	56.16 .34	20.7 2.3	54.63 .16	70.5 0.9	13.45 .15	8.5 3.8	48.62 .86	69.4 2.7
30.5	56.44 .22	23.1 2.5	54.77 .11	69.7 0.6	13.56 +.07	12.3 3.8	49.34 .57	72.2 2.9
Feb. 9.5	56.59 +.09	25.7 2.6	54.86 .06	69.2 0.4	13.59 −.01	16.1 3.7	49.75+ .26	75.2 3.0
19.5	56.62 −.03	28.4 +2.6	54.89 +.01	68.9 −0.2	13.54 −.09	19.7 −3.5	49.85− .05	78.2 +3.0
29.4	56.53 .14	31.0 2.5	54.88 −.03	68.7 0.0	13.41 .16	23.0 3.2	49.64 .35	81.2 2.9
Mar. 10.4	56.34 .24	33.4 2.2	54.83 .07	68.8 +0.1	13.21 .22	26.1 2.9	49.15 .62	84.1 2.7
20.4	56.06 .32	35.6 2.0	54.74 .10	69.0 0.2	12.96 .28	28.8 2.5	48.40 .86	86.6 2.4
30.4	55.70 .38	37.5 1.6	54.62 .12	69.3 0.3	12.66 .32	31.1 2.0	47.44 1.05	88.8 2.0
Apr. 9.3	55.29 −.42	38.9 +1.2	54.49 −.14	69.6 +0.4	12.32 −.34	32.9 −1.6	46.31−1.19	90.5 +1.5
19.3	54.86 .44	39.9 0.7	54.35 .14	70.1 0.4	11.97 .36	34.2 1.1	45.06 1.27	91.7 0.9
29.3	54.41 .44	40.4 +0.3	54.22 .14	70.5 0.5	11.60 .37	35.1 0.6	43.76 1.31	92.3 +0.3
May 9.2	53.98 .42	40.4 −0.2	54.09 .13	71.0 0.5	11.24 .36	35.4 −0.1	42.45 1.29	92.4 −0.2
19.2	53.57 .38	39.9 0.7	53.97 .11	71.5 0.5	10.88 .35	35.2 +0.4	41.18 1.22	91.9 0.7
29.2	53.21 −.33	39.0 −1.1	53.87 −.09	72.0 +0.5	10.54 −.32	34.5 +0.9	40.00−1.12	90.9 −1.3
June 8.2	52.91 .27	37.6 1.5	53.80 .06	72.4 0.5	10.24 .29	33.3 1.4	38.95 .97	89.3 1.8
18.1	52.68 .20	35.9 1.9	53.75 .03	72.9 0.4	9.96 .25	31.6 1.8	38.06 .80	87.3 2.2
28.1	52.52 .12	33.8 2.2	53.73 −.01	73.3 0.4	9.73 .21	29.6 2.2	37.35 .61	84.9 2.6
July 8.1	52.45 −.04	31.4 2.5	53.74 +.02	73.6 0.3	9.55 .16	27.2 2.5	36.84 .40	82.1 2.9
18.1	52.45 +.04	28.8 −2.7	53.78 +.05	73.9 +0.3	9.41 −.10	24.5 +2.8	36.56− .17	79.1 −3.1
28.0	52.54 .13	26.0 2.8	53.84 .08	74.1 0.2	9.34 −.04	21.6 3.0	36.50+ .05	75.8 3.3
Aug. 7.0	52.71 .21	23.2 2.9	53.93 .11	74.2 +0.1	9.33 +.02	18.6 3.0	36.66 .28	72.5 3.4
17.0	52.96 .29	20.2 2.9	54.05 .14	74.2 0.0	9.39 .09	15.6 3.0	37.06 .51	69.0 3.4
26.9	53.29 .36	17.3 2.9	54.20 .16	74.1 −0.2	9.52 .16	12.7 2.8	37.68 .73	65.6 3.4
Sept. 5.9	53.70 +.44	14.5 −2.8	54.38 +.19	73.7 −0.4	9.71 +.23	10.0 +2.6	38.51+ .94	62.3 −3.3
15.9	54.17 .51	11.7 2.6	54.58 .22	73.2 0.6	9.96 .29	7.6 2.2	39.55 1.13	59.1 3.1
25.9	54.71 .57	9.2 2.4	54.82 .25	72.5 0.8	10.28 .35	5.6 1.8	40.78 1.31	56.1 2.8
Oct. 5.8	55.31 .63	6.8 2.2	55.08 .27	71.5 1.0	10.66 .40	4.1 1.2	42.17 1.47	53.4 2.5
15.8	55.97 .68	4.8 1.9	55.36 .29	70.4 1.2	11.09 .44	3.2 +0.6	43.72 1.61	51.1 2.2
25.8	56.66 +.72	3.0 −1.5	55.66 +.31	69.1 −1.4	11.55 +.48	2.8 0.0	45.40+1.72	49.1 −1.7
Nov. 4.8	57.39 .74	1.7 1.1	55.98 .33	67.6 1.5	12.04 .49	3.2 −0.7	47.16 1.79	47.6 1.0
14.7	58.14 .74	0.8 0.7	56.32 .33	66.0 1.6	12.54 .50	4.2 1.3	48.98 1.83	46.7 0.7
24.7	58.89 .74	0.3 −0.2	56.65 .33	64.4 1.6	13.04 .48	5.8 1.9	50.82 1.82	46.2 −0.2
Dec. 4.7	59.62 .71	0.4 +0.3	56.98 .32	62.7 1.6	13.51 .46	8.0 2.5	52.62 1.76	46.4 +0.4
14.6	60.31 +.66	0.9 +0.8	57.30 +.30	61.1 −1.5	13.95 +.41	10.7 −2.9	54.34+1.65	47.1 +1.0
24.6	60.94 .59	2.0 1.3	57.59 .28	59.6 1.4	14.34 .35	13.9 3.3	55.92 1.49	48.3 1.5
34.6	61.50 +.52	3.5 +1.7	57.95 +.24	58.2 −1.3	14.66 +.29	17.4 −3.6	57.32+1.31	50.1 +2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Hydræ.		d Ursæ Majoris.		θ Ursæ Majoris.		ε Leonis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	9h 22m	− 8° 11′	9h 24m	+70° 17′	9h 25m	+52° 9′	9h 39m	+24° 16′
	s	″	s	″	s	″	s	″
Jan. 0.6	17.05 +.26	19.1 −2.3	57.83 +.65	70.1 +1.4	38.77 +.39	64.4 +0.6	43.53 +.30	16.3 −0.8
10.6	17.28 .21	21.3 2.1	58.43 .55	71.8 1.8	39.14 .34	65.2 1.0	43.81 .26	15.6 0.5
20.6	17.47 .17	23.4 2.0	58.92 .43	73.8 2.2	39.44 .27	66.5 1.4	44.05 .21	15.2 −0.2
30.5	17.61 .12	25.4 1.9	59.28 .30	76.2 2.5	39.68 .20	68.0 1.7	44.24 .16	15.1 0.0
Feb. 9.5	17.71 .07	27.2 1.7	59.51 .18	78.9 2.7	39.83 .12	69.8 1.9	44.38 .11	15.2 +0.3
19.5	17.75 +.02	28.7 −1.4	59.60 +.03	81.6 +2.7	39.91 +.04	71.8 +2.0	44.46 +.05	15.6 +0.5
29.5	17.75 −.02	30.0 1.1	59.56 −.10	84.3 2.7	39.91 −.03	73.8 2.1	44.49 .00	16.3 0.7
Mar. 10.4	17.71 .06	31.0 0.9	59.40 .22	87.0 2.5	39.84 .10	75.9 2.0	44.47 −.04	17.0 0.8
20.4	17.63 .09	31.8 0.6	59.12 .32	89.4 2.3	39.71 .15	77.8 1.8	44.41 .08	17.9 0.9
30.4	17.52 .11	32.3 0.4	58.75 .40	91.5 1.9	39.53 .20	79.6 1.6	44.31 .11	18.8 0.9
Apr. 9.3	17.40 −.13	32.6 −0.2	58.32 −.46	93.2 +1.5	39.32 −.23	81.1 +1.3	44.19 −.13	19.7 +0.9
19.3	17.26 .14	32.6 +0.1	57.83 .49	94.5 1.0	39.08 .24	82.3 1.0	44.06 .14	20.5 0.8
29.3	17.13 .14	32.5 0.3	57.33 .51	95.3 +0.5	38.83 .24	83.1 0.6	43.92 .14	21.3 0.7
May 9.3	16.99 .13	32.1 0.5	56.82 .50	95.5 0.0	38.59 .24	83.6 +0.2	43.78 .13	21.9 0.6
19.2	16.87 .12	31.6 0.6	56.33 .47	95.3 −0.5	38.36 .22	83.6 −0.1	43.65 .12	22.4 0.4
29.2	16.76 −.10	30.8 +0.8	55.89 −.42	94.6 −1.0	38.15 −.19	83.3 −0.5	43 53 −.11	22.7 +0.3
June 8.2	16.67 .08	30.0 0.9	55.50 .35	93.3 1.4	37.97 .16	82.6 0.8	43.43 .09	22.9 +0.1
18.2	16.60 .06	29.0 1.1	55.18 .28	91.7 1.8	37.84 .12	81.6 1.2	43.36 .06	22.9 0.0
28.1	16.56 .03	27.9 1.1	54.93 .20	89.7 2.2	37.74 .07	80.2 1.5	43.31 .04	22.8 −0.2
July 8.1	16.54 −.01	26.7 1.2	54.77 .12	87.3 2.5	37.69 −.03	78.6 1.7	43.29 −.01	22.5 0.3
18.1	16.54 +.02	25.5 +1.2	54.69 −.02	84.7 −2.7	37.68 +.02	76.7 −2.0	43.29 +.01	22.1 −0.5
28.0	16.58 .05	24.3 1.2	54.71 +.06	81.8 2.9	37.73 .07	74.6 2.2	43.32 .04	21.5 0.6
Aug. 7.0	16.64 .08	23.1 1.1	54.82 .15	78.8 3.0	37.82 .11	72.3 2.3	43.38 .08	20.8 0.8
17.0	16.73 .10	22.1 1.0	55.02 .24	75.7 3.1	37.95 .16	70.0 2.4	43.48 .11	19.9 1.0
27.0	16.84 .13	21.2 0.8	55.31 .33	72.6 3.1	38.14 .21	67.5 2.5	43.60 .14	18.8 1.1
Sept. 5.9	16.99 +.16	20.5 +0.6	55.69 +.42	69.5 −3.0	38.36 +.25	65.0 −2.5	43.75 +.17	17.6 −1.3
15.9	17.17 .19	20.1 +0.3	56.15 .50	66.5 2.9	38.64 .30	62.5 2.5	43.93 .20	16.3 1.4
25.9	17.38 .22	20.0 0.0	56.70 .58	63.6 2.7	38.96 .34	60.0 2.4	44.15 .23	14.8 1.5
Oct. 5.9	17.61 .25	20.2 −0.4	57.32 .65	60.9 2.5	39.32 .38	57.6 2.3	44.40 .26	13.2 1.6
15.8	17.88 .28	20.8 0.7	58.01 .72	58.5 2.2	39.72 .42	55.4 2.1	44.68 .29	11.5 1.7
25.8	18.17 +.30	21.7 −1.1	58.75 +.77	56.5 −1.9	40.16 +.46	53.3 −1.9	44.99 +.32	9.8 −1.8
Nov. 4.8	18.48 .32	23.0 1.4	59.54 .81	54.8 1.5	40.63 .48	51.5 1.6	45.32 .34	8.0 1.8
14.7	18.80 .32	24.5 1.7	60.36 .83	53.6 1.0	41.11 .49	50.0 1.3	45.67 .36	6.2 1.7
24.7	19.13 .32	26.4 2.0	61.20 .83	52.8 −0.5	41.61 .50	48.9 0.9	46.03 .36	4.5 1.6
Dec. 4.7	19.45 .32	28.5 2.2	62.02 .81	52.6 0.0	42.10 .49	48.1 0.5	46.39 .36	2.9 1.5
14.7	19.76 +.31	30.7 −2.3	62.81 +.77	52.9 +0.6	42.58 +.46	47.8 −0.1	46.75 +.35	1.5 −1.3
24.6	20.06 .28	33.0 2.3	63.55 .70	53.8 1.1	43.03 .43	47.9 +0.3	47.08 .32	+ 0.3 1.0
34.6	20.32 +.24	35.3 −2.3	64.21 +.62	55.1 +1.6	43.44 +.38	48.5 +0.7	47.39 +.29	− 0.6 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Leonis.		α Leonis. (*Regulus.*)		32 Ursæ Majoris.		γ¹ Leonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 9 46	+26° 30′	h m 10 2	+12° 29′	h m 10 10	+65° 38′	h m 10 14	+20° 22′
	s	″	s	″	s	″	s	″
Jan. 0.6	37.55 +.31	54.5 −0.8	37.32 +.30	43.5 −1.5	12.75 +.60	39.6 +0.7	1.20 +.32	75.4 −1.3
10.6	37.84 .27	53.8 0.5	37.60 .26	42.1 1.3	13.32 .54	40.6 1.2	1.50 .28	74.3 1.0
20.6	38.09 .22	53.5 −0.2	37.84 .22	41.0 1.0	13.82 .45	42.0 1.7	1.76 .24	73.5 0.6
30.6	38.29 .17	53.5 +0.1	38.04 .17	40.1 0.8	14.22 .35	43.9 2.1	1.98 .19	73.0 −0.3
Feb. 9.5	38.43 .12	53.8 0.4	38.19 .12	39.5 0.5	14.52 .25	46.1 2.4	2.14 .14	72.8 0.0
19.5	38.52 +.06	54.3 +0.6	38.28 +.07	39.1 −0.2	14.71 +.14	48.6 +2.6	2.26 +.09	72.9 +0.2
29.5	38.56 +.01	55.1 0.8	38.33 +.02	39.0 0.0	14.79 +.03	51.3 2.7	2.32 +.04	73.3 0.4
Mar. 10.4	38.55 −.04	56.0 0.9	38.34 −.02	39.1 +0.2	14.77 −.07	54.0 2.6	2.34 .00	73.8 0.6
20.4	38.49 .07	57.0 0.9	38.30 .05	39.4 0.4	14.64 .17	56.5 2.5	2.31 −.04	74.5 0.7
30.4	38.40 .10	58.0 1.0	38.23 .08	39.8 0.5	14.43 .25	58.9 2.2	2.25 .07	75.3 0.8
Apr. 9.4	38.28 −.13	59.0 +1.0	38.14 −.10	40.3 +0.5	14.14 −.31	61.0 +1.9	2.16 −.10	76.2 +0.8
19.3	38.15 .14	60.0 0.9	38.02 .12	40.8 0.6	13.81 .35	62.7 1.5	2.05 .12	77.0 0.8
29.3	38.00 .14	60.7 0.7	37.90 .12	41.4 0.6	13.44 .38	64.1 1.1	1.93 .13	77.8 0.8
May 9.3	37.86 .14	61.4 0.6	37.78 .12	42.0 0.6	13.05 .39	64.9 0.6	1.80 .12	78.6 0.7
19.3	37.73 .13	61.9 0.4	37.66 .11	42.6 0.5	12.66 .38	65.3 +0.1	1.68 .12	79.2 0.6
29.2	37.61 −.11	62.2 +0.2	37.55 −.10	43.1 +0.5	12.29 −.36	65.2 −0.4	1.57 −.11	79.7 +0.4
June 8.2	37.50 .09	62.3 +0.1	37.46 .09	43.6 0.4	11.94 .33	64.5 0.9	1.47 .10	80.1 0.3
18.2	37.42 .07	62.3 −0.1	37.38 .07	44.0 0.4	11.63 .28	63.5 1.3	1.38 .08	80.3 +0.2
28.2	37.37 .05	62.1 0.3	37.32 .05	44.4 0.3	11.37 .23	62.0 1.7	1.31 .06	80.4 0.0
July 8.1	37.34 −.02	61.7 0.5	37.28 −.03	44.6 0.2	11.17 .17	60.1 2.1	1.27 .04	80.4 −0.1
18.1	37.33 +.01	61.2 −0.6	37.27 .00	44.8 +0.1	11.03 −.11	57.8 −2.4	1.24 −.01	80.1 −0.3
28.1	37.37 .04	60.5 0.8	37.28 +.02	44.8 0.0	10.96 −.04	55.3 2.7	1.24 +.01	79.8 0.5
Aug. 7.0	37.41 .07	59.6 1.0	37.31 .05	44.8 −0.1	10.95 +.03	52.5 2.9	1.27 .04	79.2 0.6
17.0	37.50 .10	58.6 1.1	37.37 .08	44.5 0.3	11.01 .10	49.5 3.1	1.32 .07	78.5 0.8
27.0	37.61 .13	57.4 1.3	37.46 .10	44.1 0.5	11.14 .17	46.3 3.2	1.40 .10	77.6 1.0
Sept. 6.0	37.76 +.16	56.0 −1.4	37.58 +.13	43.6 −0.7	11.35 +.24	43.1 −3.2	1.52 +.13	76.5 −1.2
15.9	37.94 .20	54.6 1.5	37.73 .16	42.8 0.9	11.63 .31	39.9 3.2	1.66 .16	75.3 1.3
25.9	38.15 .23	53.0 1.7	37.91 .20	41.8 1.1	11.98 .39	36.7 3.1	1.84 .19	73.9 1.5
Oct. 5.9	38.40 .26	51.2 1.8	38.13 .23	40.6 1.3	12.41 .46	33.6 3.0	2.05 .23	72.3 1.7
15.8	38.68 .29	49.4 1.8	38.37 .26	39.2 1.5	12.90 .52	30.8 2.8	2.30 .26	70.5 1.8
25.8	38.99 +.32	47.6 −1.9	38.65 +.29	37.6 −1.7	13.45 +.58	28.1 −2.5	2.58 +.29	68.6 −1.9
Nov. 4.8	39.32 .34	45.7 1.8	38.95 .31	35.9 1.8	14.05 .63	25.8 2.1	2.89 .32	66.7 2.0
14.8	39.67 .36	43.8 1.8	39.28 .33	34.0 1.9	14.70 .66	23.9 1.7	3.22 .34	64.7 2.0
24.7	40.04 .37	42.1 1.7	39.61 .34	32.2 1.9	15.38 .68	22.4 1.3	3.57 .36	62.8 1.9
Dec. 4.7	40.41 .36	40.5 1.5	39.96 .34	30.2 1.9	16.07 .69	21.4 0.8	3.93 .36	60.9 1.8
14.7	40.77 +.35	39.1 −1.3	40.30 +.33	28.4 −1.8	16.76 +.67	20.9 −0.2	4.28 +.35	59.1 −1.6
24.7	41.11 .33	38.0 1.0	40.63 .31	26.6 1.6	17.42 .64	21.0 +0.3	4.62 .33	57.6 1.4
34.6	41.43 +.30	37.1 −0.7	40.93 +.29	25.1 −1.4	18.03 +.58	21.6 +0.9	4.95 +.31	56.3 −1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	9 Draconis (H.)		ρ Leonis.		η Argûs.		l Leonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 10 25	+76° 15′	h m 10 27	+ 9° 51′	h m 10 40	−59° 6′	h m 10 43	+11° 6′
	s	″	s	″	s	″	s	″
Jan. 0.7	57.77 +1.01	58.2 +0.9	7.48 +.31	46.1 −1.7	52.39 +.45	39.3 −2.9	34.76 +.32	61.2 −1.8
10.6	58.72 .90	59.3 1.4	7.77 .27	44.4 1.5	52.81 .39	42.4 3.2	35.06 .29	59.5 1.5
20.6	59.56 .76	61.0 1.9	8.03 .23	43.1 1.3	53.16 .32	45.8 3.5	35.33 .25	58.1 1.2
30.6	60.24 .60	63.2 2.3	8.25 .19	41.9 1.0	53.45 .25	49.4 3.8	35.56 .21	57.0 1.0
Feb. 9.6	60.76 .43	65.7 2.6	8.42 .15	41.1 0.7	53.65 .17	53.2 3.7	35.75 .16	56.2 0.7
19.5	61.10 +.25	68.5 +2.8	8.54 +.10	40.5 −0.4	53.78 +.09	56.9 −3.7	35.89 +.11	55.6 −0.4
29.5	61.25 +.06	71.4 3.0	8.61 .05	40.2 −0.2	53.84 +.01	60.6 3.6	35.98 .07	55.4 −0.1
Mar. 10.5	61.22 −.11	74.4 2.9	8.64 +.01	40.1 0.0	53.81 −.06	64.2 3.4	36.02 +.02	55.3 +0.1
20.4	61.02 .28	77.2 2.7	8.62 −.03	40.2 +0.2	53.72 .12	67.5 3.2	36.02 −.02	55.5 0.3
30.4	60.66 .43	79.9 2.5	8.58 .06	40.5 0.4	53.58 .17	70.5 2.9	35.99 .05	55.9 0.4
Apr. 9.4	60.16 −.55	82.2 +2.1	8 50 −.08	40.9 +0.5	53.37 −.22	73.2 −2.5	35.93 −.07	56.4 +0.5
19.4	59.56 .64	84.1 1.7	8.41 .10	41.5 0.5	53.13 .26	75.5 2.1	35.85 .09	57.0 0.6
29.3	58.88 .70	85.6 1.2	8.30 .11	42.0 0.6	52.86 .29	77.4 1.6	35.75 .10	57.6 0.6
May 9.3	58.16 .73	86.5 0.7	8.19 .11	42.6 0.6	52.56 .31	78.8 1.2	35.64 .11	58.3 0 6
19.3	57.42 .74	86.9 +0.2	8.08 .11	43.2 0.6	52.24 .32	79.7 0.7	35.53 .10	58.9 0.6
29.3	56.68 −.72	86.8 −0.4	7.97 −.10	43.8 +0.6	51.92 −.32	80.2 −0.2	35.42 −.10	59.6 +0.6
June 8.2	55.99 .67	86.1 0.9	7 87 .09	44.4 0.5	51.60 .31	80.1 +0.3	35.32 .09	60.1 0.5
18.2	55.34 .60	84.9 1.4	7.79 .08	44.9 0.5	51.29 .30	79.5 0.8	35.24 .08	60.6 0.5
28.2	54.78 .52	83.2 1 9	7.72 .06	45.3 0.4	51.00 .28	78.5 1.3	35.16 .07	61.0 0.4
July 8.1	54.30 .43	81.1 2 3	7.66 .04	45.6 0.3	50.73 .25	77.0 1.7	35.10 .05	61.4 0.3
18.1	53.93 −.32	78.6 −2.7	7.62 −.02	45.9 +0.2	50.49 −.21	75.1 +2.1	35.05 −.03	61.6 +0.1
28.1	53.67 .20	75.7 3.0	7.62 .00	46.1 +0.1	50.30 .17	72.8 2.4	35.03 −.01	61.7 0.0
Aug. 7.1	53.53 −.08	72.6 3.2	7.63 +.02	46.1 0.0	50.16 .12	70.3 2.6	35.03 +.01	61.6 −0.1
17.0	53.51 +.05	69.3 3.4	7.67 .05	46.0 −0.2	50.07 −.06	67.6 2.7	35.05 .03	61.4 0.3
27.0	53.63 .18	65.8 3.5	7.73 .08	45.7 0.4	50.04 +.01	64.8 2.8	35.09 .06	61.0 0.5
Sept. 6.0	53.87 +.31	62.3 −3.5	7.82 +.11	45.2 −0.6	50.08 +.08	62.0 +2.7	35.17 +.09	60.4 −0.7
16.0	54.24 .44	58.7 3 5	7.95 .14	44.6 0.8	50.20 .15	59.3 2.6	35.28 .12	59.7 0.9
25.9	54.75 .57	55 2 3.4	8.10 .17	43.7 1.0	50.39 .23	56.9 2.3	35.42 .16	58.7 1.1
Oct. 5.9	55.37 .69	51.9 3.2	8.29 .21	42.5 1.2	50.65 .30	54.8 1.9	35.60 .19	57.4 1.3
15.9	56.12 .80	48.8 3.0	8.52 .24	41.2 1.4	50.98 .37	53.1 1.4	35.81 .23	56.0 1.5
25.8	56.97 +.90	45.9 −2.7	8.78 +.27	39.6 −1.6	51.38 +.42	51.9 +0.9	36.06 +.26	54.3 −1.7
Nov. 4.8	57.92 .99	43.5 2.3	9.07 .30	37 9 1.8	51.83 .47	51.3 +0.3	36.33 .29	52.5 1.9
14.8	58.95 1.05	41.4 1.8	9.38 .32	36.0 2.0	52.32 .50	51.2 −0.3	36.64 .32	50.6 2.0
24.8	60.03 1.10	39.9 1.3	9.71 .34	34.0 2.0	52.84 .52	51.9 0.9	36.97 .33	48.5 2.1
Dec. 4.7	61.15 1.11	38.9 0.7	10.05 .34	32.0 2.0	53.37 .52	53.1 1.5	37.31 .34	46.4 2.0
14.7	62.26 +1.10	38.5 −0.1	10.40 +.34	30.0 −1.9	53.89 +.50	55.0 −2.1	37.66 +.34	44.4 −1.9
24.7	63.34 1.05	38.7 +0.5	10.73 .32	28.1 1.8	54.38 .47	57.3 2.6	38.00 .33	42.5 1.9
34.6	64.35 +0.98	39.4 +1.1	11.04 +.30	26.3 1.7	54.84 +.43	60.2 −3.0	38.32 +.31	40.7 −1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α Ursæ Majoris.*		*δ Leonis.*		*δ Crateris.*		*τ Leonis.*	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 10 57	° ′ +62 19	h m 11 8	° ′ +21 6	h m 11 13	° ′ −14 11	h m 11 22	° ′ + 3 26
	s	″	s	″	s	″	s	″
Jan. 0.7	4.50 +.59	51.7 0.0	21.74 +.34	53.1 −1.5	56.12 +.33	30.2 −2.4	22.64 +.33	66.7 −2.1
10.7	5.07 .54	51.9 +0.5	22.07 .32	51.7 1.2	56.43 .30	32.6 2.4	22.95 .30	64.7 1.9
20.6	5.58 .48	52.8 1.1	22.37 .28	50.7 0.9	56.72 .26	35.0 2.4	23.24 .27	62.9 1.7
30.6	6.02 .40	54.1 1.6	22.64 .24	50.0 0.5	56.96 .22	37.4 2.3	23.50 .23	61.3 1.5
Feb. 9.6	6.38 .31	55.9 2.0	22.86 .19	49.6 −0.2	57.16 .18	39.6 2.1	23.71 .19	59.9 1.2
19.5	6.64 +.22	58.1 +2.3	23.03 +.15	49.6 +0.1	57.32 +.13	41.6 −1.9	23.88 +.15	58.8 −0.9
29.5	6.81 .12	60.5 2.5	23.15 .10	49.9 0.4	57.43 .09	43.5 1.7	24.01 .10	58.0 0.7
Mar. 10.5	6.89 +.03	63.1 2.6	23.22 .05	50.4 0.7	57.50 .05	45.0 1.5	24.09 .06	57.5 0.4
20.5	6.87 −.06	65.7 2.6	23.25 +.01	51.2 0.9	57.53 +.01	46.4 1.2	24.13 +.02	57.2 −0.2
30.4	6.77 .14	68.3 2.5	23.24 −.03	52.1 1.0	57.52 −.02	47.5 1.0	24.14 −.01	57.1 0.0
Apr. 9.4	6.60 −.20	70.7 +2.3	23.19 −.06	53.2 +1.0	57.48 −.05	48.3 −0.7	24.11 −.04	57.3 +0.2
19.4	6.36 .26	72.8 2.0	23.12 .08	54.2 1.0	57.42 .07	48.9 0.5	24.06 .06	57.6 0.3
29.4	6.09 .29	74.6 1.6	23.03 .10	55.2 1.0	57.34 .09	49.2 −0.2	23.99 .08	58.0 0.4
May 9.3	5.78 .32	76.0 1.2	22.93 .11	56.2 0.9	57.24 .10	49.4 0.0	23.90 .09	58.5 0.5
19.3	5.45 .33	77.0 0.7	22.82 .11	57.1 0.8	57.14 .10	49.3 +0.2	23.81 .09	59.0 0.6
29.3	5.12 −.32	77.4 +0.2	22.70 −.11	57.8 +0.7	57.03 −.11	49.0 +0.4	23.72 −.10	59.6 +0.6
June 8.3	4.80 .31	77.4 −0.3	22.59 .10	58.4 0.5	56.93 .10	48.6 0.6	23.62 .10	60.2 0.6
18.2	4.50 .29	76.9 0.7	22.49 .10	58.9 0.3	56.83 .10	47.9 0.7	23.53 .09	60.8 0.6
28.2	4.23 .26	76.0 1.2	22.40 .09	59.1 +0.1	56.73 .09	47.1 0.8	23.44 .08	61.4 0.6
July 8.2	3.99 .22	74.5 1.6	22.32 .07	59.1 −0.1	56.64 .08	46.2 0.9	23.36 .07	61.9 0.5
18.1	3.79 −.17	72.7 −2.0	22.25 −.05	59.0 −0.3	56.57 −.07	45.2 +1.0	23.29 −.06	62.4 +0.4
28.1	3.64 .12	70.5 2.3	22.21 .04	58.6 0.5	56.51 .05	44.1 1.1	23.24 .04	62.8 0.3
Aug. 7.1	3.55 .07	68.0 2.6	22.18 −.02	58.0 0.7	56.47 .03	43.0 1.1	23.20 −.02	63.1 0.2
17.1	3.51 −.01	65.2 2.9	22.18 +.01	57.3 0.9	56.45 −.01	41.9 1.0	23.19 .00	63.3 +0.1
27.0	3.53 +.05	62.2 3.1	22.20 .04	56.3 1.1	56.45 +.02	40.9 0.9	23.20 +.02	63.3 −0.1
Sept. 6.0	3.61 + 11	59.0 −3.2	22.26 +.07	55.1 −1.3	56.49 +.05	40.1 +0.8	23.23 +.05	63.1 −0.3
16.0	3.75 .18	55.7 3.3	22.34 .10	53.7 1.5	56.56 .09	39.4 0.6	23.30 .08	62.8 0.5
26.0	3.97 .25	52.3 3.3	22.46 .14	52.1 1.7	56.67 .13	38.9 +0.3	23.40 .11	62.2 0.7
Oct. 5.9	4.25 .32	49.0 3.3	22.62 .18	50.3 1.9	56.81 .16	38.7 0 0	23.53 .15	61.3 1.0
15.9	4.60 .38	45.7 3.2	22.82 .22	48.3 2.1	57.00 .20	38.9 −0.3	23.71 .19	60.2 1.2
25.9	5.02 +.45	42.6 −3.0	23.06 +.25	46.2 −2.2	57.22 +.24	39.4 −0.7	23.92 +.23	58.9 −1.5
Nov. 4.8	5.50 .50	39.8 2.7	23.33 .29	44.0 2.2	57.49 .28	40.2 1.1	24.17 .27	57.3 1.7
14.8	6.03 .55	37.2 2.4	23.64 .32	41.7 2.3	57.78 .31	41.5 1.4	24.46 .30	55.4 1.9
24.8	6.61 .59	35.0 2.0	23.97 .34	39.4 2.2	58.10 .33	43.0 1.7	24.77 .32	53.4 2.1
Dec. 4.8	7.21 .61	33.3 1.5	24.32 .36	37.2 2.1	58.44 .34	44.9 2.0	25.10 .34	51.3 2.2
14.7	7.83 +.61	32.0 −1.0	24.68 +.36	35.2 −1.9	58.78 +.34	47.0 −2.2	25.44 +.34	49.1 −2.2
24.7	8.44 .60	31.3 −0.4	25.04 .35	33.3 1.7	59.12 .33	49.3 2.4	25.78 .33	46.9 2.1
34.7	9.03 +.57	31.2 +0.1	25.39 +.34	31.7 −1.4	59.45 +.32	51.7 −2.4	26.11 +.32	44.8 −2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	λ Draconis.		υ Leonis.		β Leonis.		γ Ursæ Majoris.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$11^h\ 24^m$	$+69^\circ\ 55'$	$11^h\ 31^m$	$-\ 0^\circ\ 13'$	$11^h\ 43^m$	$+15^\circ\ 10'$	$11^h\ 48^m$	$+54^\circ\ 17'$
	s	″	s	″	s	″	s	″
Jan. 0.7	60.42 +.77	24.7 −0.1	24.73 +.33	34.9 −2.2	32.67 +.34	31.6 −1.9	9.16 +.50	30.9 −0.9
10.7	61.17 .73	24.9 +0.5	25.05 .30	37.0 2.0	33.00 .32	29.8 1.6	9.65 .48	30.3 −0.3
20.7	61.87 .66	25.7 1.0	25.34 .27	39.0 1.9	33.31 .29	28.3 1.3	10.12 .44	30.2 +0.3
30.6	62.48 .57	27.0 1.6	25.60 .24	40.8 1.7	33.59 .26	27.2 1.0	10.54 .40	30.7 0.8
Feb. 9.6	63.00 .46	28.9 2.0	25.82 .20	42.3 1.4	33.83 .22	26.4 0.6	10.90 .33	31.8 1.3
19.6	63.40 +.34	31.1 +2.4	26.00 +.16	43.6 −1.2	34.03 +.17	25.9 −0.3	11.20 +.26	33.3 +1.7
29.5	63.69 .22	33.7 2.7	26.13 .11	44.7 0.9	34.18 .13	25.8 0.0	11.42 .19	35.2 2.0
Mar. 10.5	63.84 +.09	36.5 2.8	26.22 .07	45.4 0.6	34.28 .08	25.9 +0.3	11.58 .12	37.4 2.3
20.5	63.87 −.03	39.4 2.9	26.27 +.03	45.9 0.4	34.35 .04	26.4 0.5	11.66 +.05	39.8 2.4
30.5	63.78 .14	42.2 2.8	26.28 .00	46.2 −0.2	34.37 +.01	27.0 0.7	11.67 −.02	42.3 2.5
Apr. 9.4	63.59 −.24	44.9 +2.6	26.27 −.03	46.3 0.0	34.36 −.02	27.8 +0.8	11.61 −.08	44.7 +2.4
19.4	63.30 .32	47.3 2.3	26.22 .05	46.2 +0.2	34.32 .05	28.6 0.9	11.51 .13	47.1 2.2
29.4	62.94 .39	49.4 1.9	26.16 .07	46.0 0.3	34.26 .07	29.6 0.9	11.36 .17	49.2 2.0
May 9.3	62.52 .44	51.1 1.4	26.08 .08	45.6 0.4	34.18 .08	30.5 0.9	11.17 .20	51.1 1.7
19.3	62.07 .46	52.3 1.0	25.99 .09	45.1 0.5	34.09 .09	31.4 0.9	10.96 .22	52.6 1.3
29.3	61.59 −.48	53.0 +0.5	25.90 −.09	44.6 +0.5	34.00 −.10	32.2 +0.8	10.73 −.23	53.7 +0.9
June 8.3	61.12 .47	53.2 −0.1	25.80 .09	44.1 0.6	33.90 .10	32.9 0.7	10.49 .24	54.4 +0.5
18.2	60.65 .45	52.8 0.6	25.71 .09	43.4 0.6	33.80 .10	33.5 0.5	10.25 .23	54.6 0.0
28.2	60.21 .42	52.0 1.1	25.62 .09	42.8 0.6	33.70 .10	34.0 0.4	10.03 .22	54.4 −0.4
July 8.2	59.80 .38	50.6 1.6	25.54 .08	42.2 0.6	33.61 .09	34.3 0.2	9.81 .20	53.7 0.9
18.2	59.44 −.33	48.8 −2.0	25.47 −.07	41.7 +0.6	33.53 −.08	34.4 +0.1	9.62 −.18	52.6 −1.3
28.1	59.14 .27	46.5 2.4	25.41 .05	41.1 0.5	33.46 .06	34.4 −0.1	9.45 .15	51.1 1.7
Aug. 7.1	58.91 .20	43.9 2.8	25.36 .03	40.7 0.4	33.40 .04	34.1 0.3	9.31 .12	49.2 2.1
17.1	58.75 .12	41.0 3.1	25.34 −.01	40.3 0.3	33.37 −.02	33.7 0.5	9.21 .08	46.9 2.4
27.0	58.66 −.04	37.8 3.3	25.33 +.01	40.1 +0.1	33.35 .00	33.1 0.7	9.15 −.04	44.3 2.7
Sept. 6.0	58.66 +.04	34.3 −3.5	25.36 +.04	40.0 −0.1	33.37 +.03	32.2 −1.0	9.13 +.01	41.5 −2.9
16.0	58.75 .13	30.8 3.6	25.42 .07	40.2 0.3	33.41 .06	31.1 1.2	9.17 .06	38.4 3.1
26.0	58.93 .23	27.1 3.6	25.51 .11	40.6 0.5	33.49 .10	29.8 1.4	9.25 .12	35.2 3.3
Oct. 5.9	59.21 .32	23.5 3.6	25.63 .15	41.2 0.8	33.61 .14	28.3 1.6	9.40 .18	31.9 3.3
15.9	59.58 .41	19.9 3.5	25.80 .19	42.1 1.0	33.77 .18	26.5 1.8	9.60 .24	28.5 3.4
25.9	60.04 +.51	16.5 −3.3	26.01 +.23	43.3 −1.3	33.96 +.22	24.6 −2.0	9.87 +.30	25.1 −3.3
Nov. 4.9	60.59 .59	13.3 3.0	26.25 .26	44.7 1.6	34.20 .26	22.4 2.2	10.20 .35	21.9 3.1
14.8	61.22 .66	10.5 2.6	26.53 .29	46.4 1.8	34.48 .29	20.2 2.3	10.58 .40	18.8 2.9
24.8	61.92 .72	8.1 2.2	26.84 .32	48.4 2.0	34.78 .32	17.9 2.3	11.01 .45	16.0 2.6
Dec. 4.8	62.67 .76	6.1 1.7	27.16 .33	50.4 2.1	35.11 .34	15.6 2.3	11.48 .48	13.6 2.2
14.8	63.45 +.79	4.7 −1.2	27.50 +.34	52.6 −2.2	35.46 +.35	13.3 −2.2	11.97 +.50	11.5 −1.8
24.7	64.24 .78	3.8 −0.6	27.84 .34	54.8 2.2	35.81 .35	11.2 2.0	12.48 .51	10.0 1.3
34.7	65.01 +.76	3.6 +0.1	28.18 +.33	57.0 −2.1	36.15 +.34	9.3 −1.8	12.99 +.50	9.0 −0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*o* Virginis.		4 Draconis (H.)		*γ* Corvi.		*β* Chamæleontis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 11 59	° ′ + 9 19	h m 12 7	° ′ +78 12	h m 12 10	° ′ −16 56	h m 12 11	° ′ −78 42
	s	″	s	″	s	″	s	″
Jan. 0.7	41.93 +.34	58.6 −2.1	10.29+1.23	44.0 −0.5	14.39 +.35	22.7 −2.3	59.34+1.22	19.8 −1.5
10.7	42.27 .32	56.7 1.8	11.51 1.20	43.8 +0.2	14.73 .32	25.1 2.4	60.52 1.13	21.6 2.1
20.7	42.58 .30	55.0 1.6	12.67 1.12	44.3 0.8	15.04 .30	27.4 2.4	61.61 1.03	24.0 2.6
30.6	42.86 .27	53.5 1.3	13.74 1.01	45.4 1.4	15.33 .27	29.8 2.3	62.59 .91	26.8 3.0
Feb. 9.6	43.11 .23	52.3 1.0	14.68 .86	47.0 1.9	15.59 .23	32.1 2.2	63.43 .76	30.0 3.4
19.6	43.32 +.18	51.5 −0.7	15.47 +.69	49.2 +2.4	15.80 +.19	34.2 −2.0	64.11 +.60	33.6 −3.6
29.6	43.48 .14	51.0 0.4	16.07 .50	51.8 2.7	15.97 .15	36.2 1.8	64.63 .43	37.3 3.8
Mar. 10.5	43.60 .10	50.8 −0.1	16.47 .30	54.6 2.9	16.10 .11	37.9 1.6	64.98 .26	41.1 3.9
20.5	43.68 .06	50.8 +0.2	16.67 +.10	57.6 3.0	16.19 .07	39.5 1.3	65.16 +.09	45.0 3.8
30.5	43.72 +.02	51.2 0.4	16.66 −.10	60.6 3.0	16.24 +.03	40.8 1.1	65.17 −.07	48.8 3.8
Apr. 9.5	43.73 −.01	51.6 +0.6	16.46 −.29	63.6 +2.9	16.26 .00	41.8 −0.9	65.02 −.23	52.6 −3.6
19.4	43.71 .03	52.3 0.7	16.08 .45	66.3 2.6	16.24 −.02	42.7 0.7	64.72 .37	56.0 3.3
29.4	43.66 .05	53.0 0.7	15.56 .59	68.8 2.2	16.21 .04	43.3 0.5	64.27 .51	59.3 3.1
May 9.4	43.60 .07	53.7 0.8	14.90 .71	70.9 1.8	16.15 .06	43.7 0.3	63.69 .63	62.2 2.7
19.3	43.52 .08	54.5 0.8	14.14 .79	72.5 1.4	16.08 .08	43.9 −0.1	63.00 .74	64.6 2.3
29.3	43.43 −.09	55.3 +0.7	13.31 −.85	73.6 +0.9	16.00 −.09	43.8 +0.1	62.21 −.83	66.7 −1.8
June 8.3	43.34 .09	56.0 0.7	12.43 .88	74.1 +0.3	15.90 .10	43.6 0.3	61.35 .90	68.2 1.3
18.3	43.25 .09	56.6 0.6	11.54 .89	74.1 −0.2	15.80 .10	43.2 0.5	60.42 .94	69.3 0.8
28.2	43.15 .09	57.2 0.5	10.65 .87	73.6 0.7	15.70 .10	42.7 0.6	59.47 .96	69.7 −0.2
July 8.2	43.06 .09	57.6 0.4	9.80 .82	72.5 1.3	15.60 .10	42.0 0.7	58.50 .96	69.7 +0.3
18.2	42.98 −.08	57.9 +0.3	9.01 −.76	70.9 −1.8	15.50 −.10	41.2 +0.8	57.55 −.92	69.0 +0.9
28.2	42.90 .07	58.1 +0.1	8.29 .68	68.6 2.3	15.41 .09	40.3 0.9	56.66 .86	67.9 1.4
Aug. 7.1	42.84 .06	58.2 0.0	7.66 .58	66.3 2.7	15.32 .08	39.3 1.0	55.84 .76	66.3 1.9
17.1	42.79 .04	58.1 −0.2	7.13 .46	63.4 3.1	15.26 .06	38.3 1.0	55.13 .64	64.2 2.3
27.1	42.76 −.01	57.7 0.4	6.73 .33	60.2 3.4	15.21 −.03	37.3 0.9	54.56 .49	61.7 2.6
Sept. 6.0	42.76 +.01	57.2 −0.6	6.46 −.20	56.7 −3.6	15.19 .00	36.4 +0.8	54.15 −.32	59.0 +2.8
16.0	42.79 .04	56.5 0.8	6.34 −.05	53.0 3.8	15.21 +.03	35.6 0.7	53.92 −.13	56.1 2.9
26.0	42.85 .08	55.5 1.1	6.37 +.11	49.1 3.8	15.26 .07	35.0 0.5	53.90 +.08	53.1 3.0
Oct. 6.0	42.95 .12	54.3 1.3	6.56 .27	45.3 3.9	15.35 .11	34.6 +0.2	54.08 .29	50.2 2.8
15.9	43.09 .16	52.9 1.6	6.91 .43	41.4 3.8	15.48 .15	34.5 −0.1	54.47 .50	47.4 2.6
25.9	43.27 +.20	51.2 −1.8	7.42 +.59	37.7 −3.6	15.66 +.20	34.8 −0.4	55.07 +.69	44.9 +2.3
Nov. 4.9	43.50 .24	49.3 2.0	8.10 .75	34.2 3.4	15.88 .24	35.3 0.7	55.86 .87	42.8 1.9
14.8	43.76 .28	47.2 2.1	8.92 .89	31.0 3.0	16.14 .28	36.2 1.1	56.81 1.02	41.2 1.3
24.8	44.05 .31	45.1 2.2	9.88 1.02	28.1 2.6	16.44 .31	37.5 1.4	57.89 1.13	40.1 0.7
Dec. 4.8	44.37 .33	42.8 2.3	10.95 1.11	25.8 2.1	16.77 .33	39.1 1.7	59.07 1.20	39.7 +0.1
14.8	44.71 +.34	40.5 −2.2	12.11+1.18	23.9 −1.5	17.11 +.35	41.0 −2.0	60.31+1.24	39.9 −0.5
24.7	45.05 .34	38.3 2.1	13.32 1.22	22.7 0.9	17.46 .35	43.1 2.2	61.55 1.23	40.7 1.1
34.7	45.40 +.34	36.2 −2.0	14.54+1.22	22.1 −0.3	17.81 +.35	45.4 −2.3	62.78+1.21	42.2 −1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*η* Virginis.		*α*¹ Crucis.		*β* Corvi.		*κ* Draconis.	
	Right Ascension.	Declination *South*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.
	h m 12 14	° ′ − 0 3	h m 12 20	° ′ −62 29	h m 12 28	° ′ −22 47	h m 12 28	° ′ +70 22
	s	″	s	″	s	″	s	″
Jan. 0.7	22.17 +.34	56.5 −2.2	34.35 +.59	39.6 −1.8	41.93 +.36	47.0 −2.2	52.81 +.79	45.6 −1.0
10.7	22.50 .32	58.7 2.1	34.92 .55	41.6 2 2	42.28 .34	49.3 2.3	53.60 .77	44.9 −0.4
20.7	22.82 .30	60.7 1.9	35.46 .51	44.1 2.6	42.62 .32	51.7 2.4	54.36 .74	44.8 +0.3
30.7	23.11 .27	62.5 1.7	35.95 .46	46.9 3.0	42.92 .29	54.1 2.4	55.07 .68	45.4 0.9
Feb. 9.6	23.36 .23	64.1 1.5	36.38 .39	50.1 3.3	43.20 .25	56.6 2.4	55.71 .60	46.6 1.5
19.6	23.57 +.19	65.5 −1.2	36.73 +.32	53.5 −3.5	43.43 +.21	58.9 −2.3	56.26 +.50	48.4 +2.0
29.6	23.75 .15	66.5 0.9	37.02 .25	57.1 3.6	43.62 .17	61.1 2.1	56.70 .38	50.6 2 4
Mar. 10.5	23.88 .11	67.3 0.6	37.23 .17	60.7 3.6	43.77 .13	63.2 1.9	57.03 .26	53.2 2.7
20.5	23.98 .07	67.8 0.4	37.36 .10	64.2 3.5	43.89 .09	65.1 1.7	57.23 .14	56.0 2.9
30.5	24.03 .04	68.1 −0.2	37.42 +.03	67.7 3.4	43.96 .05	66.7 1.5	57.31 +.02	58.9 2.9
Apr. 9.5	24.06 +.01	68.2 0.0	37.42 −.04	71.0 −3.2	44.00 +.02	68.1 −1.3	57.27 −.09	61.8 +2.9
19.4	24.05 −.02	68.1 +0 2	37.35 .10	74.1 2.9	44.00 −.01	69.3 1 1	57.12 .19	64.7 2.7
29.4	24.02 .04	67.8 0.3	37.22 .15	76.9 2.6	43.98 .03	70.3 0.8	56.88 .28	67.3 2.4
May 9.4	23.97 .06	67.4 0.4	37.05 .20	79.3 2.3	43.94 .05	71.0 0.6	56.55 .36	69.6 2.1
19.4	23.91 .07	66.9 0.5	36.82 .24	81.4 1.9	43.88 .07	71.5 0.4	56.16 .42	71.5 1.7
29.3	23.83 −.08	66.4 +0.6	36.56 −.28	83.0 −1.4	43.80 −.09	71.7 −0.1	55.71 −.46	72.9 +1.2
June 8.3	23.75 .09	65.8 0.6	36.26 .31	84.2 1.0	43.71 .10	71.7 +0.1	55.23 .49	73.9 0.7
18.3	23.66 .09	65.2 0.6	35.94 .33	84.9 −0.5	43.61 .11	71.5 0.3	54.73 .50	74.3 +0.2
28.2	23.56 .09	64.6 0.6	35.61 .34	85.2 0.0	43.50 .11	71.1 0.5	54.23 .50	74.3 −0.2
July 8.2	23.47 .09	64.0 0.6	35.26 .34	84.9 +0.5	43.38 .11	70.5 0.7	53.73 .49	73.6 0.8
18.2	23.38 −.08	63.5 +0.5	34.93 −.33	84.1 +1.0	43.27 −.11	69.8 +0.9	53.26 −.46	72.5 −1.4
28.2	23.30 .08	63.0 0.4	34 60 .31	82.9 1.4	43.16 .10	68.8 1.0	52.81 .42	70.8 1.9
Aug. 7.1	23.22 .07	62.6 0.3	34.30 .28	81.3 1.8	43.06 .09	67.8 1.1	52.42 .37	68.8 2.3
17.1	23.17 .05	62.3 0.2	34.04 .23	79.3 2.1	42.97 .08	66.7 1.2	52.08 .31	66.2 2.7
27.1	23.13 −.03	62.2 +0.1	33.83 .18	77.0 2.4	42.91 .05	65.5 1.2	51.80 .24	63.4 3.0
Sept. 6.1	23.11 .00	62.1 −0.1	33.69 −.11	74.5 +2.6	42.87 −.02	64.4 +1.1	51.59 −.16	60 2 −3.3
16.0	23.13 +.03	62.3 0.3	33.62 −.03	71.9 2.6	42.86 +.01	63.3 1.0	51.47 −.08	56.7 3.6
26.0	23.17 .06	62.7 0.5	33.63 +.04	69.2 2.6	42.89 .05	62.4 0.8	51.44 +.02	53.0 3.7
Oct. 6.0	23.26 .10	63.4 0.8	33.72 .14	66.7 2.5	42.96 .09	61.7 0.6	51.51 .12	49.2 3.8
15.9	23.38 .15	64.3 1.0	33.92 .23	64.3 2.2	43.08 .14	61.2 +0.3	51.68 .22	45.4 3.8
25.9	23.55 +.19	65.5 −1.3	34.20 +.32	62.2 +1.8	43.25 +.19	61.0 0.0	51.95 +.33	41.6 −3.7
Nov. 4.9	23.76 .23	66.9 1.6	34.56 .40	60.6 1.4	43.46 .23	61.2 −0.4	52.33 .43	37.9 3.5
14.9	24.01 .27	68.6 1.8	35.01 .48	59.4 0.9	43.72 .27	61.8 0.8	52.81 .53	34.4 3.3
24.8	24.30 .30	70.5 2.0	35.52 .53	58.8 +0.4	44.01 .31	62.7 1.1	53.39 .61	31.3 3.0
Dec. 4.8	24.61 .32	72.6 2.1	36.07 .57	58.7 −0.2	44.34 .34	64.0 1.5	54.04 .69	28.5 2.5
14.8	24.94 +.34	74.7 −2.2	36.66 +.59	59.3 −0.8	44.69 +.35	65.6 −1.8	54.76 +.74	26.3 −2.0
24.8	25.28 .34	76.9 2.2	37.26 .60	60.4 1.4	45.05 .36	67.6 2.0	55.52 .77	24.5 1.4
34.7	25.62 +.34	79.2 −2.2	37.86 +.59	62.1 −1.9	45.41 +.36	69.8 −2.2	56.30 +.79	23.4 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	32^2 Camelop. (H.)		*α* Can. Venaticorum.		*θ* Virginis.		*α* Virginis. (*Spica.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	$12^{h}\ 48^{m}$	$+83^{\circ}\ 59'$	$12^{h}\ 50^{m}$	$+38^{\circ}\ 53'$	$13^{h}\ 4^{m}$	$-4^{\circ}\ 57'$	$13^{h}\ 19^{m}$	$-10^{\circ}\ 35'$
	s	″	s	″	s	″	s	″
Jan. 0.8	22.67 +2.23	43.2 −0.9	58.01 +.40	56.0 −1.9	20.46 +.34	40.6 −2.2	29.04 +.34	45.7 −2.1
10.7	24.91 2.24	42.6 −0.3	58.41 .39	54.3 1.4	20.79 .33	42.7 2.1	29.39 .34	47.8 2.1
20.7	27.13 2.18	42.7 +0.3	58.80 .38	53.1 0.9	21.12 .32	44.8 2.0	29.72 .33	49.9 2.1
30.7	29.26 2.04	43.4 1.0	59.17 .35	52.4 −0.4	21.44 .30	46.8 1.9	30.04 .31	51.9 2.0
Feb. 9.6	31.21 1.83	44.8 1.6	59.51 .32	52.3 +0.1	21.72 .27	48.6 1.7	30.34 .28	53.8 1.8
19.6	32.91 +1.55	46.7 +2.1	59.80 +.27	52.7 +0.6	21.97 +.24	50.2 −1.5	30.60 +.25	55.6 −1.6
29.6	34.31 1.22	49.1 2.5	60.05 .22	53.6 1.1	22.19 .20	51.5 1.2	30.84 .21	57.2 1.4
Mar. 10.6	35.35 .86	51.8 2.8	60.25 .17	54.8 1.5	22.37 .16	52.5 0.9	31.03 .18	58.5 1.2
20.5	36.02 .48	54.8 3.0	60.40 .12	56.5 1.8	22.52 .12	53.4 0.7	31.19 .14	59.6 1.0
30.5	36.30 + .09	57.8 3.1	60.50 .07	58.4 2.0	22.62 .09	53.9 0.5	31.32 .11	60.5 0.8
Apr. 9.5	36.19 − .29	60.9 +3.0	60.55 +.03	60.4 +2.1	22.70 +.06	54.3 −0.2	31.41 +.06	61.2 −0.6
19.5	35.71 .65	63.8 2.8	60.56 −.01	62.5 2.1	22.74 +.03	54.4 0.0	31.47 .05	61.6 0.4
29.4	34.88 .98	66.5 2.5	60.52 .05	64.6 2.1	22.76 .00	54.4 +0.1	31.50 +.02	61.9 −0.2
May 9.4	33.75 1.26	68.9 2.1	60.46 .08	66.7 1.9	22.75 −.02	54.2 0.2	31.50 .00	62.0 0.0
19.4	32.36 1.49	70.8 1.7	60.37 .10	68.5 1.7	22.73 .04	53.9 0.3	31.49 −.03	62.0 +0.1
29.4	30.76 −1.68	72.3 +1.2	60.25 −.12	70.1 +1.5	22.68 −.06	53.5 +0.4	31.45 −.05	61.8 +0.2
June 8.3	29.01 1.80	73.2 0.7	60.12 .14	71.4 1.2	22.62 .07	53.0 0.5	31.40 .06	61.6 0.3
18.3	27.16 1.87	73.6 +0.1	59.97 .15	72.4 0.8	22.54 .08	52.5 0.5	31.33 .08	61.2 0.4
28.3	25.26 1.89	73.4 −0.4	59.82 .16	73.0 0.4	22.45 .09	52.0 0.6	31.24 .09	60.8 0.5
July 8.2	23.37 1.87	72.7 1.0	59.66 .15	73.3 +0.1	22.35 .10	51.4 0.5	31.14 .10	60.3 0.5
18.2	21.53 −1.79	71.4 −1.5	59.51 −.15	73.1 −0.3	22.25 −.10	50.9 +0.5	31.04 −.11	59.8 +0.6
28.2	19.78 1.67	69.7 2.0	59.36 .15	72.6 0.7	22.15 .10	50.3 0.5	30.93 .11	59.2 0.6
Aug. 7.2	18.17 1.52	67.4 2.5	59.21 .14	71.8 1.1	22.05 .09	49.9 0.5	30.82 .11	58.6 0.6
17.1	16.74 1.33	64.7 2.9	59.09 .12	70.5 1.4	21.96 .09	49.4 0.4	30.72 .10	58.0 0.6
27.1	15.51 1.11	61.7 3.2	58.98 .09	68.9 1.8	21.88 .07	49.1 0.3	30.63 .08	57.5 0.5
Sept. 6.1	14.51 − .86	58.3 −3.5	58.91 −.06	66.9 −2.1	21.82 −.05	48.8 +0.2	30.56 −.06	57.0 +0.4
16.1	13.78 .59	54.7 3.7	58.86 −.03	64.7 2.4	21.78 −.02	48.8 0.0	30.51 −.03	56.7 0.3
26.0	13.33 .29	50.9 3.9	58.85 +.01	62.1 2.7	21.78 +.02	48.9 −0.2	30.49 .00	56.5 +0.1
Oct. 6.0	13.19 − .02	46.9 3.9	58.89 .06	59.4 2.9	21.82 .06	49.2 0.4	30.51 +.04	56.5 −0.1
16.0	13.36 + .34	43.0 3.9	58.97 .11	56.4 3.0	21.90 .10	49.8 0.7	30.57 .09	56.7 0.3
25.9	13.86 + .67	39.1 −3.8	59.11 +.16	53.3 −3.1	22.02 +.15	50.6 −1.0	30.68 +.13	57.2 −0.6
Nov. 4.9	14.69 .99	35.4 3.6	59.30 .21	50.1 3.2	22.18 .19	51.8 1.2	30.84 .18	57.9 0.9
14.9	15.83 1.30	31.9 3.3	59.54 .26	46.9 3.2	22.40 .23	53.1 1.5	31.04 .22	59.0 1.2
24.9	17.28 1.58	28.8 2.9	59.83 .31	43.8 3.1	22.65 .27	54.7 1.7	31.29 .26	60.2 1.4
Dec. 4.8	18.99 1.83	26.1 2.5	60.16 .35	40.8 2.8	22.94 .30	56.6 1.9	31.57 .30	61.8 1.7
14.8	20.93 +2.02	23.8 −1.9	60.53 +.38	38.1 −2.5	23.26 +.32	58.6 −2.1	31.88 +.33	63.6 −1.9
24.8	23.03 2.15	22.2 1.3	60.92 .40	35.7 2.2	23.59 .34	60.7 2.1	32.22 .34	65.6 2.0
34.8	25.23 +2.25	21.2 −0.7	61.32 +.40	33.7 −1.8	23.93 +.34	62.9 −2.2	32.56 +.34	67.6 −2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Virginis.		η Ursæ Majoris.		η Bootis.		β Centauri.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 13 29	° ′ − 0 2	h m 13 43	° ′ +49 50	h m 13 49	° ′ +18 55	h m 13 56	° ′ −59 50
	s	″	s	″	s	″	s	″
Jan. 0.8	10.28 +.34	35.4 −2.2	16.29 +.44	54.9 −2.3	31.46 +.34	76.0 −2.4	9.52 +.57	48.4 −0.5
10.8	10.62 .33	37.6 2.1	16.74 .44	52.9 1.8	31.80 .34	73.7 2.1	10.09 .57	49.2 1.0
20.7	10.95 .32	39.6 1.9	17.18 .44	51.4 1.2	32.15 .33	71.8 1.8	10.67 .56	50.5 1.5
30.7	11.27 .30	41.5 1.7	17.62 .43	50.5 −0.6	32.48 .32	70.2 1.4	11.23 .54	52.3 1.9
Feb. 9.7	11.56 .28	43.1 1.5	18.04 .40	50.3 0.0	32.80 .30	69.0 1.0	11.76 .51	54.4 2.3
19.7	11.83 +.25	44.5 −1.2	18.43 +.36	50.6 +0.6	33.09 +.28	68.2 −0.5	12.25 +.46	56.9 −2.6
29.6	12.07 .22	45.6 1.0	18.77 .32	51.5 1.2	33.35 .24	67.9 −0.1	12.69 .41	59.6 2.8
Mar. 10.6	12.27 .18	46.4 0.7	19.06 .26	53.0 1.6	33.58 .21	68.0 +0.3	13.08 .36	62.5 3.0
20.6	12.43 .15	46.9 0.4	19.29 .20	54.9 2.0	33.77 .17	68.5 0.6	13.41 .30	65.6 3.1
30.5	12.57 .12	47.1 −0.1	19.47 .15	57.1 2.3	33.92 .13	69.3 0.9	13.68 .24	68.7 3.1
Apr. 9.5	12.66 +.08	47.2 +0.1	19.59 +.09	59.6 +2.5	34.04 +.10	70.3 +1.2	13.89 +.18	71.8 −3.1
19.5	12.73 .05	47.0 0.3	19.65 +.04	62.2 2.6	34.12 .07	71.6 1.4	14.04 .12	74.8 3.0
29.5	12.77 +.03	46.6 0.4	19.66 −.01	64.8 2.6	34.17 .04	73.0 1.5	14.13 +.06	77.7 2.8
May 9.4	12.78 .00	46.1 0.5	19.62 .06	67.4 2.5	34.19 +.01	74.5 1.5	14.16 .00	80.4 2.6
19.4	12.77 −.02	45.6 0.6	19.54 .10	69.8 2.3	34.18 −.02	76.0 1.4	14.13 −.05	83.0 2.4
29.4	12.74 −.04	45.0 +0.6	19.42 −.14	71.9 +2.0	34.15 −.04	77.4 +1.4	14.06 −.11	85.2 −2.1
June 8.4	12.69 .06	44.3 0.6	19.27 .17	73.8 1.7	34.09 .06	78.7 1.3	13.92 .16	87.1 1.8
18.3	12.62 .08	43.7 0.6	19.09 .19	75.3 1.3	34.02 .08	79.9 1.1	13.74 .20	88.7 1.4
28.3	12.54 .09	43.0 0.6	18.89 .21	76.3 0.9	33.93 .10	80.9 0.9	13.52 .24	89.9 1.0
July 8.3	12.45 .10	42.5 0.6	18.67 .22	77.0 +0.4	33.82 .11	81.6 0.6	13.26 .27	90.7 0.6
18.2	12.34 −.11	41.9 +0.5	18.44 −.23	77.2 0.0	33.70 −.12	82.1 +0.4	12.97 −.30	91.0 −0.1
28.2	12.23 .11	41.5 0.4	18.20 .23	76.9 −0.5	33.58 .13	82.4 +0.2	12.66 .31	90.9 +0.3
Aug. 7.2	12.13 .10	41.1 0.3	17.97 .23	76.1 1.0	33.45 .13	82.5 −0.1	12.35 .31	90.3 0.8
17.2	12.02 .10	40.8 0.2	17.75 .21	74.9 1.4	33.32 .12	82.2 0.4	12.04 .30	89.3 1.2
27.1	11.93 .09	40.7 +0.1	17.55 .19	73.3 1.8	33.20 .11	81.7 0.7	11.75 .27	88.0 1.6
Sept. 6.1	11.85 −.07	40.7 −0.1	17.37 −.16	71.3 −2.2	33.10 −.09	80.8 −0.9	11.50 −.23	86.2 +1.9
16.1	11.79 .04	40.9 0.3	17.22 .13	68.8 2.6	33.02 .07	79.7 1.2	11.29 .18	84.2 2.1
26.1	11.77 −.01	41.3 0.5	17.11 .08	66.1 2.9	32.96 −.04	78.3 1.5	11.14 .11	82.0 2.3
Oct. 6.0	11.78 +.03	41.9 0.7	17.05 −.03	63.0 3.2	32.94 .00	76.7 1.8	11.07 −.03	79.6 2.3
16.0	11.82 .07	42.8 0.9	17.05 +.03	59.7 3.4	32.97 +.04	74.7 2.1	11.08 +.05	77.3 2.3
26.0	11.92 +.12	43.9 −1.2	17.11 +.09	56.2 −3.5	33.03 +.09	72.6 −2.3	11.17 +.14	75.0 +2.2
Nov. 4.9	12.06 .16	45.2 1.5	17.23 .15	52.6 3.6	33.15 .14	70.2 2.5	11.36 .23	72.9 1.9
14.9	12.25 .21	46.8 1.7	17.42 .22	48.9 3.6	33.31 .19	67.6 2.6	11.64 .32	71.1 1.6
24.9	12.48 .25	48.6 1.9	17.67 .28	45.3 3.5	33.52 .23	64.9 2.7	12.01 .40	69.7 1.2
Dec. 4.9	12.75 .28	50.6 2.0	17.98 .33	41.9 3.3	33.78 .27	62.2 2.7	12.44 .47	68.7 0.7
14.8	13.05 +.31	52.7 −2.1	18.34 +.36	38.8 −3.0	34.07 +.30	59.5 −2.7	12.94 +.52	68.2 +0.2
24.8	13.38 .33	54.9 2.2	18.75 .42	36.0 2.6	34.39 .33	56.9 2.5	13.48 .56	68.2 −0.2
34.8	13.71 +.34	57.1 −2.2	19.18 +.44	33.6 −2.1	34.73 +.34	54.5 −2.3	14.05 +.57	68.7 −0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Draconis.		*α* Bootis. (*Arcturus.*)		*θ* Bootis.		*ρ* Bootis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 14 1	° ′ +64 52	h m 14 10	° ′ +19 44	h m 14 21	° ′ +52 20	h m 14 27	° ′ +30 50
	s	″	s	″	s	″	s	″
Jan. 0.8	27.02 +.58	75.2 −2.3	42.92 +.33	35.3 −2.5	30.12 +.42	45.9 −2.6	9.36 +.34	34.7 −2.7
10.8	27.62 .60	73.2 1.7	43.26 .33	32.9 2.2	30.55 .44	43.5 2.1	9.70 .35	32.2 2.3
20.8	28.23 .62	71.8 1.1	43.59 .33	30.9 1.9	31.00 .45	41.7 1.5	10.06 .36	30.1 1.8
30.7	28 85 .61	71.1 −0.4	43.93 .32	29.1 1.5	31.46 .45	40.4 0.9	10.42 .35	28.5 1.4
Feb. 9.7	29.45 .58	71.0 +0.2	44.25 .31	27.8 1.1	31.91 .43	39.8 −0.3	10.76 .34	27.4 0.9
19.7	30.00 +.53	71.6 +0.9	44.55 +.29	27.0 −0.6	32.33 +.40	39.8 +0.3	11.09 +.32	26.8 −0.3
29.6	30.51 .47	72.8 1.5	44.82 .26	26.6 −0.2	32.71 .36	40.5 0.9	11.40 .29	26.8 +0.2
Mar. 10.6	30.94 .40	74.5 2.0	45.07 .22	26.6 +0.2	33.06 .32	41.7 1.4	11.67 .25	27.2 0.7
20.6	31.29 .31	76.7 2.4	45.27 .18	27.0 0.6	33.35 .27	43.4 1.9	11.90 .22	28.1 1.1
30.6	31.56 .22	79.3 2.7	45.44 .15	27.8 0.9	33.58 .21	45.5 2.3	12.10 .18	29.5 1.5
Apr. 9.5	31.74 +.13	82.1 +2.9	45.58 +.12	28.8 +1.2	33.76 +.15	48.0 +2.5	12.25 +.14	31.1 +1.8
19.5	31.83 +.05	85.1 3.0	45.68 .08	30.1 1.4	33.88 .09	50.7 2.7	12.37 .10	33.0 2.0
29.5	31.84 −.04	88.1 2.9	45.75 .04	31.6 1.5	33.94 +.03	53.4 2.8	12.45 .06	35.1 2.1
May 9.5	31.76 .12	90.9 2.8	45.78 +.01	33.1 1.5	33.94 −.02	56.2 2.7	12.50 +.03	37.2 2.1
19.4	31.60 .19	93.6 2.5	45.79 −.01	34.7 1.5	33.90 .07	58.9 2.5	12.51 .00	39.3 2.1
29.4	31.38 −.25	96.1 +2.2	45.77 −.03	36.2 +1.4	33.80 −.11	61.3 +2.3	12.49 −.03	41.3 +2.0
June 8.4	31.11 .30	98.1 1.9	45.73 .05	37.5 1.3	33.67 .15	63.5 2.0	12.44 .06	43.2 1.8
18.3	30.78 .34	99.7 1.4	45.66 .07	38.8 1.2	33.49 .19	65.4 1.7	12.36 .09	44.8 1.5
28.3	30.42 .38	100.9 0.9	45.57 .09	39.9 1.0	33.29 .22	66.8 1.3	12.26 .11	46.2 1.3
July 8.3	30.02 .40	101.6 +0.4	45.47 .11	40.7 0.7	33.06 .24	67.9 0.8	12.14 .13	47.4 1.0
18.3	29.61 −.41	101.8 −0.1	45.35 −.13	41.3 +0.5	32.81 −.26	68.5 +0.4	11.99 −.15	48.1 +0.6
28.2	29.19 .42	101.4 0.6	45.22 .13	41.6 +0.2	32.54 .27	68.6 −0.1	11.84 .16	48.5 +0.2
Aug. 7.2	28.77 .41	100.5 1.1	45.08 .14	41.7 −0.1	32.27 .27	68.2 0.6	11.68 .17	48.6 −0.1
17.2	28.37 .39	99.2 1.6	44.94 .13	41.5 0.4	32.00 .26	67.3 1.1	11.51 .17	48.3 0.5
27.2	27.99 .36	97.3 2.1	44.81 .12	41.0 0.7	31.74 .25	66.0 1.6	11.34 .16	47.6 0.9
Sept. 6.1	27.64 −.32	95.0 −2.5	44.68 −.11	40.2 −1.0	31.49 −.23	64.2 −2.0	11.19 −.14	46.5 −1.2
16.1	27.34 .27	92.3 2.9	44.58 .09	39.0 1.3	31.28 .20	62.0 2.4	11.06 .12	45.1 1.6
26.1	27.10 .21	89.2 3.2	44.50 .06	37.6 1.6	31.10 .15	59.4 2.8	10.95 .09	43.4 1.9
Oct. 6.0	26.93 .14	85.8 3.5	44.46 −.02	35.9 1.8	30.97 .10	56.4 3.1	10.87 .05	41.3 2.2
16.0	26.83 +.05	82.1 3.7	44.45 +.02	34.0 2.1	30.90 −.04	53.2 3.4	10.84 −.01	38.8 2.5
26.0	26.83 +.03	78.3 −3.9	44.50 +.06	31.7 −2.3	30.89 +.02	49.7 −3.6	10.86 +.04	36.2 −2.8
Nov. 5.0	26.91 .13	74.4 3.9	44.59 .11	29.3 2.5	30.94 .08	46.0 3.7	10.92 .09	33.3 3.0
14.9	27.09 .22	70.5 3.8	44.73 .16	26.7 2.7	31.06 .15	42.3 3.7	11.04 .15	30.2 3.1
24.9	27.37 .32	66.7 3.7	44.92 .21	23.9 2.9	31.26 .23	38.5 3.7	11.22 .20	27.1 3.2
Dec. 4.9	27.73 .41	63.1 3.4	45.15 .25	21.1 2.8	31.52 .29	34.9 3.5	11.44 .25	23.9 3.1
14.9	28.18 +.48	59.8 −3.1	45.42 +.29	18.3 −2.8	31.85 +.35	31.5 −3.3	11.71 +.29	20.8 −3.0
24.8	28.70 .54	57.0 2.6	45.73 .31	15.5 2.6	32.22 .40	28.4 2.9	12,02 .32	17.9 2.8
34.8	29.26 +.58	54.6 −2.1	46.06 +.33	13.0 −2.4	32.64 +.44	25.6 −2.5	12.35 +.35	15.2 −2.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	5 Ursæ Minoris.		α² Centauri.		ε Bootis.		α² Libræ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 14 27	° ′ +76 10	h m 14 32	° ′ −60 23	h m 14 40	° ′ +27 31	h m 14 44	° ′ −15 35
	s	″	s	″	s	″	s	″
Jan. 0.8	43.94 +.88	17.1 −2.4	14.19 +.55	17.4 0.0	14.95 +.33	38.1 −2.7	52.50 +.33	29.9 −1.6
10.8	44.85 .94	14.9 1.8	14.75 .57	17.7 −0.5	15.29 .34	35.6 2.3	52.84 .34	31.6 1.7
20.8	45.82 .99	13.4 1.2	15.33 .57	18.5 1.0	15.63 .35	33.4 1.9	53.18 .34	33.3 1.7
30.7	46.82 1.00	12.6 −0.5	15.90 .56	19.8 1.4	15.98 .34	31.7 1.5	53.52 .33	35.0 1.7
Feb. 9.7	47.82 .98	12.4 +0.1	16.46 .54	21.4 1.8	16.32 .33	30.4 1.0	53.85 .32	36.7 1.6
19.7	48.78 +.92	12.9 +0.8	16.98 +.51	23.4 −2.1	16.65 +.31	29.7 −0.5	54.17 +.30	38.3 −1.5
29.7	49.66 .83	14.0 1.4	17.47 .46	25.7 2.4	16.95 .29	29.5 0.0	54.46 .28	39.8 1.4
Mar. 10.6	50.44 .72	15.7 1.9	17.91 .41	28.3 2.6	17.22 .26	29.7 +0.5	54.73 .25	41.1 1.2
20.6	51.09 .58	17.9 2.4	18.30 .36	31.0 2.8	17.46 .22	30.4 0.9	54.96 .22	42.3 1.0
30.6	51.60 .43	20.5 2.7	18.63 .30	33.8 2.9	17.67 .19	31.6 1.3	55.18 .19	43.2 0.9
Apr. 9.6	51.96 +.28	23.4 +3.0	18.91 +.25	36.7 −2.9	17.84 +.15	33.1 +1.6	55.36 +.16	44.0 −0.7
19.5	52.15 +.11	26.4 3.1	19.12 .19	39.6 2.9	17.97 .11	34.8 1.8	55.51 .14	44.6 0.5
29.5	52.19 −.05	29.5 3.0	19.28 .13	42.5 2.8	18.07 .08	36.7 2.0	55.63 .11	45.1 0.4
May 9.5	52.06 .20	32.5 2.9	19.38 +.06	45.2 2.7	18.13 .05	38.7 2.0	55.72 .08	45.4 0.3
19.4	51.79 .34	35.4 2.7	19.41 .00	47.8 2.5	18.16 +.01	40.8 2.0	55.79 .05	45.6 −0.1
29.4	51.39 −.46	38.0 +2.4	19.38 −.06	50.2 −2.3	18.15 −.02	42.7 +1.9	55.82 +.02	45.7 0.0
June 8.4	50.86 .57	40.2 2.0	19.30 .11	52.4 2.0	18.12 .05	44.6 1.8	55.83 −.01	45.6 +0.1
18.4	50.23 .67	42.1 1.6	19.16 .17	54.2 1.7	18.06 .07	46.3 1.6	55.81 .03	45.5 0.1
28.3	49.52 .74	43.4 1.1	18.96 .22	55.7 1.3	17.97 .10	47.7 1.3	55.76 .06	45.4 0.2
July 8.3	48.74 .80	44.2 0.6	18.72 .26	56.9 0.9	17.86 .12	48.8 1.0	55.69 .08	45.1 0.3
18.3	47.92 −.83	44.6 +0.1	18.43 −.30	57.6 −0.5	17.73 −.14	49.7 +0.7	55.59 −.10	44.9 +0.3
28.3	47.07 .85	44.4 −0.5	18.12 .32	57.9 −0.1	17.58 .15	50.3 +0.4	55.48 .12	44.5 0.4
Aug. 7.2	46.22 .84	43.6 1.0	17.79 .34	57.7 +0.4	17.43 .16	50.4 0.0	55.35 .13	44.1 0.4
17.2	45.38 .82	42.4 1.5	17.45 .33	57.1 0.8	17.26 .16	50.3 −0.3	55.22 .14	43.7 0.4
27.2	44.57 .78	40.6 2.0	17.12 .32	56.1 1.2	17.10 .16	49.8 0.7	55.08 .13	43.2 0.4
Sept. 6.1	43.82 −.72	38.4 −2.4	16.81 −.29	54.7 +1.6	16.95 −.15	48.9 −1.0	54.95 −.12	42.7 +0.4
16.1	43.14 .63	35.7 2.8	16.53 .24	53.0 1.9	16.81 .13	47.7 1.4	54.84 .10	42.3 0.4
26.1	42.56 .53	32.7 3.2	16.32 .18	50.9 2.1	16.69 .10	46.1 1.7	54.74 .07	42.0 0.3
Oct. 6.1	42.08 .41	29.3 3.5	16.17 .11	48.7 2.2	16.61 .06	44.3 2.0	54.68 −.04	41.7 +0.2
16.0	41.74 .27	25.7 3.7	16.10 −.03	46.4 2.3	16.57 −.02	42.1 2.3	54.66 .00	41.6 0.0
26.0	41.54 −.12	21.8 −3.9	16.12 +.06	44.1 +2.2	16.57 +.03	39.6 −2.6	54.69 +.05	41.7 −0.2
Nov. 5.0	41.49 +.03	17.9 3.9	16.23 .16	41.9 2.1	16.63 .08	36.9 2.8	54.76 .10	41.9 0.4
15.0	41.61 .20	14.0 3.9	16.44 .25	39.9 1.9	16.73 .13	34.0 3.0	54.89 .15	42.4 0.6
24.9	41.90 .37	10.1 3.8	16.74 .34	38.2 1.6	16.89 .18	31.0 3.0	55.07 .20	43.2 0.8
Dec. 4.9	42.35 .52	6.4 3.5	17.12 .42	36.8 1.2	17.10 .23	27.9 3.0	55.29 .24	44.1 1.1
14.9	42.94 +.67	3.1 −3.2	17.57 +.48	35.9 +0.7	17.36 +.27	24.8 −3.0	55.56 +.28	45.4 −1.3
24.8	43.68 .79	+ 0.1 2.7	18.08 .53	35.4 +0.2	17.65 .31	21.9 2.8	55.86 .31	46.8 1.5
34.8	44.52 +.90	− 2.4 −2.2	18.63 +.56	35.4 −0.3	17.97 +.33	19.2 −2.6	56.18 +.34	48.3 −1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Ursæ Minoris.		β Bootis.		β Libræ.		μ¹ Bootis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 14 50	° ′ +74 35	h m 14 57	° ′ +40 48	h m 15 11	° ′ − 8 59	h m 15 20	° ′ +37 41
	s	″	s	″	s	″	s	″
Jan. 0.8	59.52 +.74	32.2 −2.7	51.28 +.34	48.1 −2.9	9.97 +.30	2.1 −1.7	23.10 +.31	71.0 −3.0
10.8	60.30 .81	29.8 2.1	51.64 .36	45.3 2.5	10.28 .32	3.9 1.7	23.43 .34	68.2 2.6
20.8	61.15 .87	27.9 1.5	52.01 .37	43.1 2.0	10.61 .33	5.6 1.7	23.78 .36	65.8 2.2
30.8	62.04 .90	26.7 0.9	52.39 .38	41.3 1.5	10.94 .33	7.3 1.6	24.14 .37	63.8 1.7
Feb. 9.7	62.95 .89	26.2 −0.2	52.77 .37	40.1 0.9	11.26 .32	8.9 1.5	24.51 .36	62.4 1.1
19.7	63.83 +.86	26.4 +0.5	53.14 +.36	39.5 −0.3	11.58 +.30	10.3 −1.3	24.87 +.35	61.6 −0.5
29.7	64.66 .79	27.2 1.1	53.49 .33	39.6 +0.3	11.88 .28	11.5 1.1	25.21 .33	61.4 0.0
Mar. 10.7	65.41 .70	28.6 1.6	53.81 .30	40.1 0.8	12.15 .26	12.5 0.9	25.53 .30	61.7 +0.6
20.6	66.06 .59	30.6 2.1	54.09 .26	41.2 1.3	12.41 .24	13.3 0.7	25.82 .27	62.6 1.1
30.6	66.60 .47	33.0 2.6	54.33 .22	42.8 1.8	12.63 .21	13.9 0.5	26.08 .24	63.9 1.6
Apr. 9.6	66.99 +.33	35.7 +2.9	54.53 +.18	44.8 +2.1	12.83 +.19	14.2 −0.3	26.30 +.20	65.7 +1.9
19.5	67.25 .18	38.7 3.1	54.69 .13	47.1 2.4	13.00 .16	14.4 −0.1	26.48 .16	67.8 2.2
29.5	67.36 +.04	41.8 3.1	54.80 .09	49.5 2.5	13.15 .13	14.4 +0.1	26.62 .12	70.2 2.4
May 9.5	67.34 −.10	44.9 3.0	54.87 .05	52.1 2.6	13.26 .10	14.2 0.2	26.71 .08	72.7 2.5
19.5	67.17 .23	47.9 2.9	54.90 +.01	54.6 2.5	13.35 .07	14.0 0.3	26.77 +.04	75.2 2.5
29.4	66.88 −.35	50.7 +2.6	54.89 −.03	57.1 +2.4	13.41 +.04	13.7 +0.3	26.79 .00	77.7 +2.4
June 8.4	66.47 .46	53.1 2.3	54.84 .07	59.4 2.2	13.43 +.01	13.3 0.4	26.77 −.04	80.1 2.3
18.4	65.96 .55	55.2 1.9	54.75 .10	61.5 1.9	13.43 −.02	12.8 0.4	26.71 .08	82.3 2.1
28.4	65.36 .63	56.9 1.4	54.63 .13	63.2 1.6	13.40 .04	12.4 0.4	26.62 .11	84.2 1.8
July 8.3	64.70 .69	58.1 0.9	54.49 .16	64.7 1.2	13.35 .07	12.0 0.4	26.50 .14	85.8 1.5
18.3	63.97 −.74	58.7 +0.4	54.31 −.18	65.7 +0.8	13.26 −.09	11.6 +0.4	26.34 −.16	87.0 +1.1
28.3	63.21 .77	58.9 −0.1	54.12 .20	66.4 +0.4	13.16 .11	11.2 0.4	26.17 .18	87.9 0.7
Aug. 7.2	62.43 .78	58.5 0.6	53.91 .21	66.6 0.0	13.04 .13	10.8 0.4	25.97 .20	88.4 +0.3
17.2	61.65 .77	57.6 1.1	53.70 .22	66.3 −0.4	12.90 .14	10.4 0.3	25.76 .21	88.4 −0.2
27.2	60.89 .74	56.2 1.6	53.48 .21	65.7 0.9	12.76 .14	10.1 0.3	25.55 .21	88.0 0.6
Sept. 6.2	60.16 −.70	54.3 −2.1	53.27 −.20	64.6 −1.3	12.62 −.13	9.9 +0.2	25.34 −.20	87.2 −1.0
16.1	59.49 .63	51.9 2.6	53.08 .18	63.0 1.7	12.50 .12	9.7 +0.1	25.14 .19	86.0 1.4
26.1	58.90 .55	49.1 3.0	52.91 .15	61.1 2.1	12.39 .09	9.7 0.0	24.96 .17	84.4 1.8
Oct. 6.1	58.40 .45	46.0 3.3	52.78 .12	58.8 2.5	12.31 .06	9.8 −0.1	24.82 .14	82.3 2.2
16.1	58.01 .33	42.5 3.6	52.69 .06	56.1 2.8	12.26 −.02	10.0 0.3	24.71 .09	79.9 2.6
26.0	57.74 −.20	38.8 −3.8	52.65 −.01	53.2 −3.1	12.26 +.02	10.4 −0.5	24.64 −.04	77.2 −2.9
Nov. 5.0	57.61 −.05	35.0 3.9	52.66 +.04	49.9 3.3	12.31 .07	11.0 0.7	24.64 +.02	74.2 3.1
15.0	57.64 +.10	31.0 3.9	52.74 .10	46.6 3.4	12.40 .12	11.9 0.9	24.68 .07	71.0 3.3
24.9	57.81 .25	27.1 3.8	52.87 .16	43.1 3.5	12.55 .17	13.0 1.1	24.79 .13	67.6 3.4
Dec. 4.9	58.14 .40	23.4 3.6	53.07 .22	39.6 3.4	12.74 .22	14.2 1.3	24.95 .19	64.2 3.4
14.9	58.61 +.54	19.8 −3.4	53.31 +.27	36.2 −3.3	12.98 +.26	15.7 −1.5	25.17 +.24	60.8 −3.3
24.9	59.21 .66	16.6 3.0	53.61 .32	32.9 3.1	13.26 .29	17.3 1.6	25.44 .29	57.5 3.1
34.8	59.93 +.77	13.9 −2.5	53.95 +.35	30.0 −2.8	13.56 +.31	18.9 −1.7	25.74 +.32	54.5 −2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ² Ursæ Minoris.		α Coronæ Borealis.		α Serpentis.		ε Serpentis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 15 20	+72° 12′	h m 15 30	+27° 4′	h m 15 38	+ 6° 45′	h m 15 45	+ 4° 47′
	s	″	s	″	s	″	s	″
Jan. 0.9	51.95 +.59	50.1 −3.0	5.34 +.29	33.1 −2.9	55.17 +.28	51.9 −2.2	24.19 +.28	67.5 −2.1
10.8	52.58 .66	47.4 2.5	5.64 .31	30.4 2.6	55.46 .30	49.7 2.1	24.47 .29	65.4 2.0
20.8	53.28 .73	45.1 1.9	5.96 .33	28.0 2.2	55.77 .31	47.7 2.0	24.78 .31	63.4 1.9
30.8	54.04 .77	43.5 1.3	6.30 .34	26.0 1.8	56.09 .32	45.8 1.7	25.09 .32	61.6 1.7
Feb. 9.8	54.83 .79	42.5 −0.6	6.64 .33	24.5 1.3	56.40 .32	44.3 1.4	25.41 .31	60.0 1.4
19.7	55.62 +.77	42.3 +0.1	6.97 +.32	23.4 −0.8	56.72 +.31	43.0 −1.1	25.72 +.30	58.8 −1.1
29.7	56.37 .73	42.7 0.7	7.29 .31	22.9 −0.3	57.02 .29	42.1 0.7	26.02 .29	57.8 0.8
Mar. 10.7	57.08 .67	43.7 1.3	7.59 .29	22.9 +0.2	57.30 .27	41.5 −0.4	26.31 .28	57.2 0.4
20.6	57.71 .59	45.3 1.9	7.86 .26	23.3 0.7	57.57 .25	41.3 0.0	26.58 .26	57.0 −0.1
30.6	58.25 .49	47.5 2.4	8.11 .23	24.3 1.1	57.81 .23	41.5 +0.3	26.82 .23	57.1 +0.2
Apr. 9.6	58.68 +.38	50.0 +2.7	8.32 +.20	25.6 +1.5	58.02 +.20	42.0 +0.6	27.04 +.20	57.4 +0.5
19.6	59.00 .26	52.9 2.9	8.50 .17	27.3 1.8	58.21 .17	42.7 0.8	27.24 .18	58.1 0.7
29.5	59.19 .14	55.9 3.1	8.65 .13	29.2 2.0	58.37 .15	43.7 1.0	27.40 .15	58.9 0.9
May 9.5	59.27 +.02	59.1 3.1	8.76 .10	31.3 2.1	58.50 .12	44.8 1.1	27.54 .12	59.9 1.0
19.5	59.22 −.10	62.2 3.0	8.84 .06	33.5 2.2	58.60 .09	46.0 1.2	27.65 .09	61.1 1.1
29.5	59.06 −.21	65.1 +2.8	8.89 +.03	35.7 +2.1	58.68 +.06	47.2 +1.2	27.73 +.06	62.2 +1.2
June 8.4	58.79 .32	67.8 2.6	8.90 .00	37.7 2.0	58.72 +.03	48.5 1.2	27.78 +.03	63.4 1.1
18.4	58.42 .41	70.3 2.2	8.88 −.04	39.7 1.8	58.73 .00	49.7 1.2	27.80 .00	64.6 1.1
28.4	57.96 .50	72.3 1.8	8.82 .07	41.4 1.6	58.71 −.03	50.8 1.1	27.79 −.03	65.6 1.0
July 8.3	57.43 .57	73.9 1.4	8.74 .10	43.0 1.4	58.66 .06	51.9 1.0	27.74 .06	66.6 0.9
18.3	56.83 −.62	75.0 +0.9	8.62 −.13	44.2 +1.1	58.59 −.09	52.7 +0.8	27.67 −.09	67.5 +0.8
28.3	56.19 .66	75.7 +0.4	8.48 .15	45.1 0.7	58.48 .11	53.4 0.6	27.57 .11	68.2 0.6
Aug. 7.3	55.51 .68	75.8 −0.1	8.32 .16	45.7 +0.4	58.36 .13	54.0 0.4	27.45 .13	68.7 0.5
17.2	54.82 .69	75.3 0.6	8.15 .17	45.9 0.0	58.22 .14	54.3 0.2	27.31 .14	69.1 0.3
27.2	54.13 .68	74.4 1.2	7.97 .18	45.8 −0.3	58.07 .15	54.5 +0.1	27.17 .15	69.3 +0.1
Sept. 6.2	53.45 −.66	72.9 −1.7	7.79 −.17	45.3 −0.7	57.92 −.15	54.5 −0.2	27.02 −.15	69.3 −0.1
16.2	52.81 .61	71.0 2.2	7.62 .16	44.4 1.0	57.78 .14	54.2 0.4	26.87 .14	69.1 0.3
26.1	52.23 .55	68.6 2.6	7.47 .14	43.2 1.4	57.65 .12	53.7 0.6	26.74 .12	68.7 0.5
Oct. 6.1	51.71 .47	65.8 3.0	7.34 .11	41.6 1.7	57.54 .09	52.9 0.9	26.63 .09	68.0 0.7
16.1	51.29 .37	62.6 3.3	7.25 .07	39.6 2.1	57.47 .05	51.9 1.1	26.55 .06	67.1 1.0
26.0	50.97 −.26	59.1 −3.6	7.20 −.03	37.4 −2.4	57.43 −.01	50.7 −1.4	26.51 −.02	66.0 −1.2
Nov. 5.0	50.77 .14	55.4 3.8	7.19 +.02	34.8 2.6	57.44 +.03	49.2 1.6	26.52 +.03	64.7 1.5
15.0	50.70 −.01	51.5 3.9	7.24 .08	32.1 2.8	57.50 .08	47.5 1.8	26.57 .08	63.1 1.7
25.0	50.76 +.13	47.6 3.9	7.35 .13	29.1 3.0	57.61 .13	45.6 2.0	26.67 .13	61.3 1.9
Dec. 4.9	50.96 .26	43.8 3.8	7.50 .18	26.0 3.1	57.76 .18	43.5 2.1	26.82 .18	59.4 2.0
14.9	51.20 +.39	40.1 −3.6	7.71 +.23	23.0 −3.0	57.97 +.22	41.3 −2.2	27.02 +.22	57.3 −2.1
24.9	51.74 .51	36.6 3.3	7.95 .27	20.0 2.9	58.21 .26	39.1 2.2	27.26 .25	55.1 2.1
34.9	52.31 +.62	33.6 −2.8	8.25 +.30	17.1 −2.8	58.48 +.29	36.9 −2.2	27.53 +.28	53.0 −2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Ursæ Minoris.		ε Coronæ Borealis.		δ Scorpii.		β¹ Scorpii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 15 47	° ′ +78 7	h m 15 53	° ′ +27 11	h m 15 53	° ′ −22 18	h m 15 59	° ′ −19 30
	s	″	s	″	s	″	s	″
Jan. 0.9	52.04 +.70	20.2 −3.2	5.33 +.27	18.0 −2.9	54.74 +.30	47.8 −0.9	7.36 +.29	32.9 −1.0
10.9	52.82 .85	17.3 2.7	5.62 .30	15.3 2.6	55.05 .32	48.8 1.0	7.66 .31	33.9 1.1
20.8	53.74 .97	14.8 2.2	5.93 .32	12.8 2.3	55.38 .34	49.9 1.1	7.98 .33	35.1 1.2
30.8	54.76 1.05	13.0 1.5	6.25 .33	10.7 1.9	55.72 .34	51.1 1.2	8.32 .34	36.3 1.2
Feb. 9.8	55.85 1.10	11.7 0.9	6.59 .33	9.0 1.4	56.07 .34	52.3 1.2	8.66 .34	37.6 1.2
19.7	56.96 +1.11	11.2 −0.2	6.92 +.32	7.8 −0.9	56.41 +.34	53.5 −1.2	8.99 +.33	38.7 −1.2
29.7	58.07 1.08	11.3 +0.4	7.24 .31	7.2 −0.4	56.74 .33	54.7 1.1	9.32 .32	39.9 1.1
Mar. 10.7	59.12 1.01	12.1 1.0	7.55 .29	7.0 +0.1	57.06 .31	55.8 1.1	9.63 .30	40.9 1.0
20.7	60.08 .91	13.4 1.6	7.83 .27	7.4 0.6	57.36 .29	56.8 1.0	9.93 .28	41.8 0.9
30.6	60.93 .77	15.4 2.1	8.10 .25	8.3 1.1	57.63 .26	57.7 0.9	10.20 .26	42.6 0.7
Apr. 9.6	61.63 +.62	17.8 +2.5	8.33 +.22	9.6 +1.5	57.88 +.24	58.5 −0.8	10.45 +.24	43.2 −0.6
19.6	62.17 .45	20.5 2.8	8.53 .19	11.2 1.8	58.11 .21	59.2 0.7	10.68 .21	43.8 0.5
29.6	62.53 .27	23.5 3.0	8.70 .15	13.1 2.0	58.31 .18	59.8 0.6	10.88 .19	44.2 0.4
May 9.5	62.70 +.09	26.6 3.1	8.84 .12	15.2 2.2	58.48 .15	60.3 0.5	11.05 .16	44.5 0.3
19.5	62.70 −.10	29.7 3.1	8.94 .08	17.4 2.2	58.61 .12	60.8 0.4	11.19 .13	44.8 0.2
29.5	62.51 −.27	32.8 +3.0	9.01 +.05	19.7 +2.2	58.72 +.09	61.1 −0.3	11.30 +.10	44.9 −0.2
June 8.4	62.14 .44	35.6 2.7	9.04 +.01	21.9 2.1	58.80 .06	61.4 0.3	11.38 .06	45.1 0.1
18.4	61.62 .59	38.2 2.4	9.04 −.02	24.0 2.0	58.83 +.02	61.7 0.2	11.42 +.02	45.1 −0.1
28.4	60.96 .73	40.5 2.1	9.00 .05	25.9 1.8	58.84 −.01	61.9 0.2	11.43 −.01	45.2 0.0
July 8.4	60.16 .85	42.4 1.6	8.92 .09	27.6 1.5	58.81 .05	62.0 −0.1	11.40 .04	45.2 0.0
18.3	59.26 −.94	43.8 +1.2	8.82 −.12	29.0 +1.2	58.74 −.08	62.0 0.0	11.34 −.08	45.1 +0.1
28.3	58.27 1.02	44.7 0.7	8.69 .14	30.1 0.9	58.65 .11	62.0 +0.1	11.25 .11	45.1 0.1
Aug. 7.3	57.22 1.07	45.1 +0.2	8.53 .16	30.8 0.6	58.52 .13	61.9 0.1	11.13 .13	44.9 0.2
17.3	56.13 1.10	45.0 −0.3	8.36 .18	31.2 +0.2	58.38 .15	61.7 0.2	10.99 .15	44.7 0.2
27.2	55.03 1.10	44.4 0.8	8.17 .19	31.3 −0.2	58.22 .16	61.4 0.3	10.84 .16	44.5 0.3
Sept. 6.2	53.93 −1.07	43.3 −1.3	7.98 −.19	31.0 −0.5	58.06 −.16	61.1 +0.4	10.68 −.16	44.1 +0.3
16.2	52.88 1.02	41.7 1.8	7.80 .18	30.3 0.9	57.91 .15	60.7 0.4	10.53 .15	43.8 0.3
26.1	51.89 .94	39.5 2.3	7.63 .16	29.2 1.3	57.77 .13	60.3 0.4	10.39 .13	43.5 0.3
Oct. 6.1	50.99 .84	37.0 2.7	7.48 .13	27.7 1.6	57.65 .10	59.9 0.4	10.27 .10	43.2 0.3
16.1	50.21 .71	34.1 3.1	7.37 .09	25.9 1.9	57.57 .06	59.5 0.4	10.18 .06	42.9 0.2
26.1	49.57 −.56	30.8 −3.4	7.29 −.05	23.8 −2.3	57.53 −.02	59.2 +0.3	10.14 −.02	42.8 +0.1
Nov. 5.0	49.09 .39	27.3 3.6	7.26 .00	21.4 2.6	57.53 +.03	58.9 +0.2	10.14 +.03	42.7 0.0
15.0	48.79 −.20	23.6 3.8	7.29 +.05	18.7 2.8	57.60 .09	58.9 0.0	10.20 .08	42.8 −0.2
25.0	48.69 .00	19.7 3.8	7.36 .10	15.8 2.9	57.71 .14	59.0 −0.2	10.31 .13	43.1 0.4
Dec. 5.0	48.79 +.20	15.9 3.8	7.49 .15	12.8 3.0	57.88 .19	59.3 0.4	10.46 .18	43.6 0.6
14.9	49.08 +.39	12.2 −3.6	7.67 +.20	9.7 −3.0	58.10 +.24	59.8 −0.6	10.67 +.23	44.2 −0.7
24.9	49.58 .58	8.7 3.3	7.90 .25	6.7 3.0	58.36 .28	60.5 0.8	10.93 .27	45.0 0.9
34.9	50.25 +.76	5.5 −3.0	8.16 +.28	3.8 −2.8	58.66 +.31	61.4 −1.0	11.21 +.30	46.0 −1.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombridge 2320.		δ Ophiuchi.		τ Herculis.		α Scorpii. (*Antares.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 16 5	° ′ +68 5	h m 16 8	° ′ − 3 24	h m 16 16	° ′ +46 33	h m 16 22	° ′ −26 11
	s	″	s	″	s	″	s	″
Jan. 0.9	58.95 +.41	27.0 −3.4	39.23 +.26	59.8 −1.8	27.76 +.27	62.2 −3.4	44.83 +.28	29.5 −0.5
10.9	59.40 .49	23.8 3.0	39.51 .28	61.6 1.7	28.06 .31	59.0 3.0	45.12 .31	30.1 0.7
20.8	59.93 .56	21.1 2.5	39.80 .30	63.3 1.7	28.39 .35	56.2 2.6	45.45 .33	30.8 0.8
30.8	60.51 .61	18.8 1.9	40.11 .31	64.9 1.5	28.76 .38	53.8 2.1	45.79 .35	31.7 0.9
Feb. 9.8	61.14 .64	17.2 1.3	40.43 .31	66.4 1.3	29.14 .39	51.9 1.5	46.14 .35	32.6 0.9
19.8	61.79 +.65	16.3 −0.6	40.74 +.31	67.6 −1.1	29.53 +.39	50.7 −0.9	46.49 +.35	33.5 −1.0
29.7	62.43 .63	16.1 +0.1	41.05 .30	68.6 0.9	29.92 .38	50.1 −0 3	46.84 .34	34.5 1.0
Mar. 10.7	63.06 .60	16.5 0.8	41.35 .29	69.3 0.6	30.30 .37	50.1 +0.3	47.17 .33	35.4 0.9
20.7	63.64 .55	17.6 1.4	41.63 .27	69.8 0.3	30.66 .34	50.8 0.9	47.50 .31	36.3 0.9
30.7	64.16 .49	19.3 1.9	41.89 .25	70.0 −0.1	30.99 .31	52.0 1.5	47.80 .29	37.2 0.8
Apr. 9.6	64.62 +.41	21.4 +2.4	42.13 +.23	69.9 +0.2	31.28 +.28	53.8 +2.0	48.08 +.27	37.9 −0.7
19.6	64.99 .33	24.0 2.7	42.35 .20	69.6 0.4	31.54 .23	55.9 2.3	48.34 .25	38.6 0.7
29.6	65.27 .23	26.9 3.0	42.54 .18	69.1 0.5	31.75 .19	58.4 2.6	48.57 .22	39.3 0.6
May 9.5	65.45 .14	30.0 3.2	42.70 .15	68.5 0.6	31.91 .14	61.2 2.8	48.77 .19	39.9 0.6
19.5	65.54 +.04	33.2 3.2	42.84 .12	67.8 0.7	32.03 .09	64.1 2.9	48.95 .16	40.5 0.5
29.5	65 53 −.06	36.3 +3.1	42.95 +.09	67.0 +0.8	32.10 +.04	67.0 +2.9	49.09 +.12	41.0 −0.5
June 8.5	65.42 .15	39.4 2.9	43.02 .06	66.2 0.8	32.12 .00	69.9 2.8	49.19 .09	41.4 0.5
18.4	65.22 .24	42.2 2.7	43.07 +.03	65.4 0.8	32.09 −.05	72.6 2.6	49.26 .05	41.9 0.4
28.4	64.94 .32	44.7 2.4	43.08 −.01	64.7 0.7	32.01 .10	75.1 2.3	49.29 +.01	42.3 0.4
July 8.4	64.58 .39	46.9 2.0	43.05 .04	64.0 0.7	31.89 .14	77.3 2.0	49.28 −.03	42.6 0.3
18.4	64.16 −.45	48.7 +1.5	43.00 −.07	63.3 +0.6	31.72 −.18	79.2 +1.7	49.23 −.06	42.9 −0.2
28.3	63.67 .50	50.0 1.1	42.91 .10	62.8 0.5	31.52 .21	80.7 1.3	49.15 .10	43.0 −0.1
Aug. 7.3	63.15 .54	50.8 +0.6	42.80 .12	62.3 0.4	31.29 .24	81.7 0.8	49.03 .13	43.1 0.0
17.3	62.58 .57	51.1 0.0	42.67 .14	61.9 0.3	31.03 .27	82.3 +0.4	48.89 .15	43.1 +0.1
27.2	62.00 .58	50.9 −0.5	42.52 .15	61.7 0.2	30.76 .28	82.5 −0.1	48.73 .16	43.0 0.2
Sept. 6.2	61.42 −.58	50.2 −1.0	42.37 −.15	61.5 +0.1	30.48 −.28	82.1 −0.6	48.56 −.17	42.8 +0.3
16.2	60.85 .56	48.9 1.5	42.22 .15	61.6 −0.1	30.20 .27	81.3 1.1	48.39 .16	42.4 0.4
26.2	60.31 .52	47.1 2.0	42.08 .13	61.7 0.2	29.93 .25	80.0 1.6	48.23 .15	42.0 0.4
Oct. 6.1	59.81 .47	44.9 2.4	41.96 .11	62.0 0.4	29.69 .22	78.2 2.0	48.09 .12	41.6 0.5
16.1	59.37 .40	42.2 2.8	41.87 .08	62.5 0.6	29.48 .18	76.0 2.4	47.98 .09	41.1 0.5
26.1	59.01 −.31	39.2 −3.2	41.81 −.03	63.1 −0.8	29.32 −.14	73.4 −2.8	47.92 −.04	40.6 +0.4
Nov. 5.1	58.75 .21	35.8 3.5	41.80 +.02	64.0 1.0	29.21 .08	70.5 3.1	47.90 +.01	40.2 0.4
15.0	58.58 −.11	32.2 3.7	41.84 .06	65.0 1.2	29.17 −.02	67.2 3.3	47.93 .06	39.9 0.3
25.0	58.53 .00	28.4 3.8	41.92 .11	66.3 1.3	29.18 +.05	63.8 3.5	48.02 .12	39.7 +0.1
Dec. 5.0	58.59 +.12	24.5 3.9	42.06 .16	67.7 1.5	29.26 .11	60.2 3.6	48.16 .17	39.6 0.0
14.9	58.76 +.23	20.7 −3.8	42.24 +.20	69.2 −1.6	29.41 +.18	56.5 −3.6	48.36 +.22	39.7 −0.2
24.9	59.04 .34	17.0 3.6	42.47 .24	70.9 1.7	29.62 .24	53.0 3.5	48.60 .26	40.1 0.4
34.9	59.43 +.44	13.6 −3.3	42.73 +.27	72.6 −1.8	29.88 +.29	49.6 −3.3	48.88 +.30	40.6 −0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Draconis.		β Herculis.		A Draconis.		ζ Ophiuchi.	
	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.
	$16^h\ 22^m$	$+61^\circ\ 45'$	$16^h\ 25^m$	$+21^\circ\ 43'$	$16^h\ 28^m$	$+68^\circ\ 59'$	$16^h\ 31^m$	$-10^\circ\ 20'$
	s	″	s	″	s	″	s	″
Jan. 0.9	29.53 +.32	18.1 −3.5	32.78 +.24	22.9 −2.8	9.09 +.36	52.4 −3.5	10.64 +.25	54.8 −1.3
10.9	29.88 .38	14.7 3.2	33.04 .27	20.2 2.6	9.49 .46	49.0 3.2	10.91 .28	56.1 1.3
20.9	30.30 .44	11.8 2.7	33.32 .29	17.7 2.3	9.99 .53	46.1 2.7	11.20 .30	57.5 1.3
30.8	30.77 .48	9.4 2.1	33.63 .31	15.6 2.0	10.56 .60	43.7 2.2	11.51 .31	58.8 1.3
Feb. 9.8	31.27 .51	7.6 1.5	33.94 .32	13.8 1.6	11.19 .64	41.8 1.5	11.82 .32	60.0 1.2
19.8	31.79 +.52	6.4 −0.9	34.26 +.32	12.4 −1.1	11.85 +.66	40.6 −0.9	12.14 +.32	61.1 −1.0
29.8	32.32 .52	5.9 −0.2	34.58 .31	11.6 0.6	12.51 .66	40.1 −0.2	12.46 .31	62.0 0.8
Mar. 10.7	32.83 .50	6.0 +0.5	34.88 .30	11.2 −0.1	13.17 .64	40.3 +0.5	12.77 .30	62.8 0.6
20.7	33.32 .47	6.8 1.1	35.18 .28	11.3 +0.4	13.79 .60	41.1 1.1	13.06 .29	63.3 0.4
30.7	33.77 .42	8.3 1.7	35.45 .26	11.9 0.8	14.36 .54	42.6 1.7	13.34 .27	63.7 −0.2
Apr. 9.6	34.16 +.37	10.2 +2.2	35.70 +.24	12.9 +1.2	14.87 +.47	44.5 +2.2	13.60 +.25	63.8 0.0
19.6	34.50 .30	12.7 2.6	35.93 .21	14.3 1.5	15.29 .38	47.0 2.6	13.84 .23	63.7 +0.1
29.6	34.77 .23	15.4 2.9	36.13 .18	16.0 1.8	15.63 .29	49.8 2.9	14.06 .20	63.5 0.2
May 9.6	34.97 .16	18.4 3.1	36.30 .15	17.9 2.0	15.87 .19	52.8 3.1	14.25 .18	63.2 0.3
19.5	35.09 .09	21.6 3.1	36.43 .12	19.9 2.1	16.01 +.09	56.0 3.2	14.42 .15	62.8 0.4
29.5	35.14 +.01	24.7 +3.1	36.54 +.09	22.0 +2.1	16.05 −.01	59.2 +3.2	14.55 +.12	62.4 +0.5
June 8.5	35.11 −.06	27.8 3.0	36.60 .05	24.1 2.1	15.99 .11	62.3 3.1	14.65 .08	61.9 0.5
18.4	35.01 .14	30.8 2.8	36.64 +.01	26.2 2.0	15.82 .21	65.3 2.9	14.72 .05	61.4 0.5
28.4	34.84 .20	33.5 2.5	36.63 −.02	28.1 1.8	15.57 .30	68.0 2.6	14.75 +.01	60.9 0.5
July 8.4	34.61 .26	35.8 2.2	36.59 .05	29.8 1.6	15.23 .38	70.4 2.2	14.75 −.02	60.5 0.4
18.4	34.31 −.32	37.8 +1.8	36.52 −.09	31.3 +1.4	14.81 −.45	72.4 +1.8	14.71 −.05	60.1 +0.4
28.3	33.97 .36	39.4 1.3	36.41 .12	32.6 1.1	14.32 .51	74.0 1.4	14.64 .09	59.7 0.3
Aug. 7.3	33.58 .40	40.5 0.9	36.28 .15	33.5 0.8	13.78 .56	75.2 0.9	14.54 .12	59.4 0.3
17.3	33.16 .43	41.1 +0.4	36.12 .17	34.1 0.5	13.19 .60	75.8 +0.4	14.41 .14	59.2 0.2
27.3	32.72 .45	41.2 −0.2	35.94 .18	34.5 +0.2	12.58 .62	75.9 −0.1	14.26 .15	58.9 0.2
Sept. 6.2	32.27 −.45	40.7 −0.7	35.76 −.18	34.4 −0.2	11.96 −.62	75.5 −0.6	14.11 −.16	58.8 +0.1
16.2	31.82 .44	39.8 1.2	35.58 .18	34.1 0.5	11.34 .61	74.5 1.2	13.95 .15	58.7 +0.1
26.2	31.40 .41	38.3 1.7	35.40 .17	33.4 0.9	10.74 .58	73.1 1.7	13.80 .14	58.6 0.0
Oct. 6.1	31.00 .37	36.4 2.2	35.25 .15	32.3 1.2	10.18 .53	71.2 2.2	13.67 .12	58.7 −0.1
16.1	30.65 .32	34.0 2.6	35.12 .11	30.9 1.6	9.68 .47	68.8 2.6	13.56 .09	58.8 0.2
26.1	30.36 −.26	31.2 −3.0	35.02 −.07	29.2 −1.9	9.25 −.38	66.0 −3.0	13.49 −.05	59.1 −0.3
Nov. 5.1	30.14 .18	28.0 3.3	34.97 −.03	27.2 2.2	8.91 .29	62.8 3.3	13.46 .00	59.6 0.5
15.0	29.99 .10	24.5 3.6	34.97 +.02	24.8 2.4	8.67 .18	59.3 3.6	13.48 +.04	60.2 0.7
25.0	29.91 −.01	20.9 3.8	35.01 .07	22.3 2.6	8.55 −.07	55.6 3.8	13.55 .09	60.9 0.8
Dec. 5.0	29.98 +.08	17.0 3.8	35.11 .12	19.6 2.7	8.54 +.05	51.8 3.8	13.67 .14	61.8 1.0
14.9	30.11 +.17	13.2 −3.8	35.26 +.17	16.8 −2.8	8.65 +.17	48.0 −3.8	13.84 +.19	62.9 −1.1
24.9	30.33 .26	9.5 3.6	35.46 .21	14.0 2.8	8.88 .29	44.2 3.6	14.05 .23	64.1 1.2
34.9	30.64 +.34	6.0 −3.4	35.69 +.25	11.2 −2.8	9.22 +.40	40.7 −3.4	14.30 +.26	65.4 −1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Trianguli Australis.		η Herculis.		κ Ophiuchi.		ε Ursæ Minoris.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$16^{h}\ 37^{m}$	$-68^{\circ}\ 49'$	$16^{h}\ 39^{m}$	$+39^{\circ}\ 7'$	$16^{h}\ 52^{m}$	$+\ 9^{\circ}\ 32'$	$16^{h}\ 56^{m}$	$+82^{\circ}\ 12'$
	s	″	s	″	s	″	s	″
Jan. 0.9	8.79 +.57	35.6 +1.7	9.61 +.23	29.8 −3.3	31.42 +.22	29.7 −2.3	56.22 +.55	39.0 −3.5
10.9	9.40 .64	34.1 1.4	9.86 .27	26.6 3.0	31.65 .25	27.5 2.2	56.90 .81	35.7 3.2
20.9	10.07 .70	32.9 1.0	10.16 .31	23.7 2.7	31.91 .27	25.4 2.0	57.85 1.07	32.7 2.8
30.8	10.81 .75	32.2 0.5	10.48 .33	21.2 2.2	32.19 .29	23.5 1.8	59.05 1.29	30.1 2.3
Feb. 9.8	11.57 .78	31.8 +0.1	10.82 .35	19.2 1.7	32.49 .30	21.8 1.5	60.44 1.46	28.1 1.7
19.8	12.36 +.79	31.9 −0.3	11.17 +.35	17.8 −1.2	32.80 +.30	20.5 −1.2	61.96+1.56	26.7 −1.1
29.8	13.15 .78	32.5 0.7	11.53 .35	16.9 −0.6	33.10 .30	19.6 0.8	63.56 1.61	25.9 −0.4
Mar. 10.7	13.92 .76	33.3 1.0	11.88 .34	16.7 0.0	33.40 .29	19.0 −0.4	65.19 1.60	25.8 +0.2
20.7	14.67 .73	34.6 1.4	12.21 .32	17.0 +0.6	33.69 .28	18.9 0.0	66.76 1.53	26.3 0.8
30.7	15.38 .69	36.1 1.7	12.53 .30	17.9 1.2	33.97 .27	19.1 +0.4	68.24 1.41	27.5 1.4
Apr. 9.6	16.04 +.63	38.0 −2.0	12.82 +.27	19.3 +1.7	34.23 +.25	19.7 +0.7	69.57+1.23	29.2 +1.9
19.6	16.65 .57	40.1 2.2	13.08 .24	21.2 2.1	34.48 .23	20.6 1.0	70.71 1.02	31.4 2.4
29.6	17.19 .50	42.4 2.4	13.30 .21	23.5 2.4	34.70 .21	21.8 1.3	71.61 .78	33.9 2.7
May 9.6	17.65 .42	44.9 2.5	13.49 .17	26.0 2.6	34.89 .18	23.2 1.5	72.26 .51	36.8 3.0
19.5	18.04 .34	47.5 2.6	13.63 .12	28.7 2.7	35.06 .15	24.7 1.6	72.63 +.23	39.9 3.2
29.5	18.33 +.25	50.2 −2.7	13.74 +.08	31.5 +2.8	35.20 +.12	26.3 +1.6	72.72 −.05	43.0 +3.1
June 8.5	18.52 .15	52.9 2.6	13.80 +.04	34.3 2.7	35.30 .09	27.9 1.6	72.53 .33	46.2 3.1
18.5	18.62 +.05	55.5 2.6	13.81 −.01	36.9 2.6	35.37 .06	29.5 1.5	72.07 .59	49.2 2.9
28.4	18.62 −.05	58.0 2.4	13.78 .05	39.4 2.4	35.40 +.02	31.0 1.4	71.34 .84	52.0 2.7
July 8.4	18.52 .15	60.3 2.2	13.71 .09	41.7 2.1	35.40 −.02	32.4 1.3	70.37 1.07	54.6 2.4
18.4	18.32 −.24	62.4 −1.9	13.60 −.13	43.7 +1.8	35.36 −.06	33.7 +1.2	69.19−1.28	56.8 +2.0
28.3	18.03 .32	64.1 1.6	13.45 .17	45.3 1.5	35.29 .09	34.7 1.0	67.81 1.45	58.6 1.6
Aug. 7.3	17.67 .39	65.5 1.2	13.27 .20	46.6 1.1	35.19 .12	35.6 0.8	66.27 1.60	60.0 1.2
17.3	17.25 .45	66.5 0.7	13.06 .22	47.5 0.6	35.06 .14	36.2 0.5	64.61 1.70	60.9 0.7
27.3	16.77 .48	67.0 −0.3	12.82 .24	47.9 +0.2	34.91 .16	36.7 0.3	62.86 1.77	61.3 +0.2
Sept. 6.2	16.28 −.49	67.0 +0.2	12.58 −.25	47.9 −0.2	34.74 −.17	36.9 +0.1	61.06−1.80	61.3 −0.3
16.2	15.78 .48	66.6 0.7	12.34 .24	47.4 0.7	34.57 .17	36.8 −0.2	59.25 1.79	60.7 0.8
26.2	15.31 .45	65.7 1.1	12.10 .23	46.5 1.2	34.41 .16	36.5 0.4	57.47 1.74	59.6 1.3
Oct. 6.2	14.88 .39	64.3 1.5	11.88 .21	45.1 1.6	34.25 .14	35.9 0.7	55.77 1.65	58.1 1.8
16.1	14.53 .31	62.6 1.9	11.69 .17	43.3 2.0	34.12 .11	35.0 1.0	54.18 1.51	56.0 2.2
26.1	14.26 −.22	60.5 +2.2	11.54 −.13	41.1 −2.4	34.02 −.08	33.9 −1.2	52.74−1.33	53.6 −2.6
Nov. 5.1	14.10 −.10	58.2 2.4	11.43 .08	38.5 2.7	33.97 −.03	32.6 1.5	51.51 1.12	50.7 3.0
15.0	14.06 +.02	55.8 2.5	11.37 −.03	35.6 3.0	33.95 +.01	31.0 1.7	50.51 .87	47.6 3.3
25.0	14.15 .15	53.3 2.5	11.38 +.03	32.5 3.2	33.98 .06	29.1 1.9	49.77 .59	44.1 3.5
Dec. 5.0	14.36 .26	50.8 2.4	11.44 .09	29.1 3.4	34.06 .11	27.1 2.1	49.34 −.30	40.6 3.6
15.0	14.70 +.40	48.5 +2.2	11.56 +.15	25.7 −3.4	34.19 +.15	25.0 −2.2	49.20 +.02	36.9 −3.6
24.9	15.16 .50	46.5 1.9	11.73 .20	22.3 3.3	34.37 .19	22.8 2.2	49.38 .33	33.3 3.5
34.9	15.71 +.60	44.7 +1.6	11.96 +.25	19.0 −3.2	34.58 +.23	20.5 −2.2	49.87 +.64	29.8 −3.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*d* Herculis.		*a*¹ Herculis.		*b* Ophiuchi.		*β* Draconis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 16 57	° ′ +33 43	h m 17 9	° ′ +14 30	h m 17 19	° ′ −24 4	h m 17 27	° ′ +52 22
	s	″	s	″	s	″	s	″
Jan. 0.9	35.11 +.21	20.2 −3.2	41.37 +.20	42.4 −2.4	44.07 +.23	34.1 −0.3	57.16 +.18	42.8 −3.6
10.9	35.34 .25	17.1 3.0	41.59 .23	39.9 2.3	44.32 .26	34.4 0.4	57.37 .23	39.2 3.4
20.9	35.61 .28	14.3 2.7	41.84 .26	37.7 2.2	44.60 .29	34.8 0.5	57.64 .29	36.0 3.1
30.9	35 90 .30	11.8 2.3	42.11 .28	35.6 1.9	44.91 .31	35.4 0.5	57.95 .33	33.1 2.7
Feb. 9.8	36.22 .32	9.7 1.8	42.40 .29	33.9 1.6	45.23 .33	35.9 0.5	58.31 .37	30.6 2.2
19.8	36.55 +.33	8.2 −1.3	42.70 +.30	32.5 −1.2	45.56 +.34	36.4 −0.5	58.70 +.40	28.7 −1.6
29.8	36.89 .33	7.1 0.7	43.01 .30	31.5 0.8	45.90 .34	36.9 0.5	59.11 .41	27.4 1.0
Mar. 10.8	37.22 .33	6.7 −0.1	43.31 .30	30.9 −0.4	46.24 .33	37.4 0.4	59.53 .42	26.8 −0.3
20.7	37.54 .32	6.8 +0.4	43.61 .29	30.8 +0.1	46.57 .33	37.8 0.4	59.94 .41	26.8 +0 3
30.7	37.85 .30	7.5 0.9	43.90 .28	31.1 0.5	46.89 .32	38.2 0.3	60.34 .39	27.5 0.9
Apr. 9.7	38.14 +.28	8.8 +1.4	44.17 +.26	31.8 +0.9	47.20 +.30	38.5 −0.3	60.72 +.36	28.8 +1.5
19.6	38.41 .25	10.4 1.8	44.42 .24	32.9 1.2	47.50 .28	38.7 0.2	61.07 .33	30.6 2.0
29.6	38.64 .22	12.5 2.1	44 66 .22	34.3 1.5	47.77 .26	38.9 0.2	61.38 .29	32.9 2.4
May 9.6	38.84 .19	14.8 2.4	44.87 .20	35.9 1.7	48.03 .24	39.1 0.2	61.65 .24	35.5 2 8
19.6	39.01 .15	17.3 2.6	45.05 .17	37.7 1.8	48.25 .21	39.2 0.2	61.86 .19	38.5 3.0
29.5	39.14 +.11	20.0 +2.6	45.20 +.14	39.5 +1.9	48.45 +.18	39.4 −0.2	62.02 +.14	41.6 +3.1
June 8.5	39.22 .07	22.6 2.6	45.31 .10	41.5 1.9	48.61 .14	39.6 0 2	62.13 .08	44.8 3.2
18.5	39.27 +.02	25.2 2.5	45.40 .06	43.4 1.8	48.73 .10	39.8 0.2	62.17 +.02	47.9 3.1
28.4	39.27 −.02	27.7 2.4	45.44 +.02	45.2 1.7	48.82 .06	40.0 0.2	62.16 −.04	51.0 3.0
July 8.4	39.23 .06	30.0 2.2	45.45 −.01	46.9 1.6	48.86 +.02	40.2 0.2	62.08 .10	53.8 2.7
18.4	39.15 −.10	32.0 +1.9	45.41 −.05	48.4 +1.4	48.86 −.02	40.4 −0.2	61.95 −.16	56.4 +2 4
28.4	39.03 .14	33.7 1.6	45.34 .09	49.7 1.2	48.82 .06	40.7 0.2	61.77 .21	58.7 2.1
Aug. 7.3	38.88 .17	35.1 1.2	45.24 .12	50.8 1.0	48.74 .10	40.9 0.2	61.53 .25	60.6 1.7
17.3	38.70 .19	36.1 0.8	45.11 .14	51.6 0.7	48.62 .13	41.0 0.1	61.26 .29	62.1 1.3
27.3	38.49 .21	36.8 +0.4	44.96 .16	52.2 0.4	48.48 .15	41.1 −0.1	60.95 .32	63.1 0.8
Sept. 6.3	38.27 −.22	37.0 0.0	44.79 −.17	52.4 +0.1	48.31 −.17	41.1 0.0	60.61 −.34	63.7 +0.3
16.2	38.04 .23	36.7 −0.4	44.61 .18	52.4 −0.2	48.14 .17	41.1 +0.1	60.27 .35	63.7 −0.2
26.2	37.82 .22	36.1 0.9	44.43 .17	52.1 0.5	47.97 .17	41.0 0.1	59.92 .34	63.3 0.7
Oct. 6.2	37.61 .20	35.0 1.3	44.27 .15	51.5 0.8	47.80 .15	40.8 0.2	59.58 .32	62.3 1.2
16.1	37.43 .17	33.5 1.7	44.12 .13	50.6 1.1	47.66 .13	40.6 0.2	59.27 .30	60.8 1.7
26.1	37.28 −.13	31.6 −2.1	44.01 −.10	49.4 −1.4	47.55 −.09	40.3 +0.2	58.99 −.26	58.9 −2.2
Nov. 5.1	37.17 .08	29.3 2.4	43.93 .06	47.9 1.6	47.48 −.05	40.1 0.2	58.76 .21	56.5 2.6
15.1	37.11 −.03	26.7 2.7	43.89 −.01	46.1 1.9	47.46 .00	39.9 0.2	58.59 .15	53.7 3.0
25.0	37 10 +.02	23.9 3.0	43.90 +.04	44.1 2.1	47.49 +.05	39.7 +0.1	58.47 .08	50.5 3.3
Dec. 5.0	37.15 .07	20.8 3.2	43.96 .08	41.9 2.3	47.57 .11	39.7 0.0	58.43 −.01	47.1 3.5
15.0	37.25 +.13	17.6 −3.2	44.07 +.13	39.5 −2.4	47.71 +.16	39.7 −0.1	58.46 +.06	43.6 −3.6
25.0	37.41 .18	14.3 3.2	44.23 .17	37.1 2.4	47.89 .20	39.9 0.2	58.56 .13	39.9 3 6
34.9	37.61 +.23	11.2 −3.1	44.42 +.21	34.7 −2.4	48.12 +.24	40.2 −0.3	58.73 +.20	36.3 −3.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ophiuchi.		ω Draconis.		μ Herculis.		ψ¹ Draconis.	
	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.
	h m 17 29	° ′ +12 38	h m 17 37	° ′ +68 48	h m 17 42	° ′ +27 46	h m 17 43	° ′ +72 11
	s	″	s	″	s	″	s	″
Jan. 1.0	53.22 +.18	13.2 −2.3	31.64 +.18	18.0 −3.7	11.83 +.16	54.2 −3.0	47.55 +.16	56.1 −3.7
10.9	53.42 .21	10.9 2.2	31.88 .28	14.4 3.5	12.01 .20	51.2 2.9	47.78 .29	52.5 3.5
20.9	53.65 .24	8.7 2.1	32.21 .38	11.0 3.2	12.23 .24	48.4 2.7	48.14 .41	49.1 3.2
30.9	53.91 .27	6.7 1.9	32.64 .47	8.0 2.8	12.49 .27	45.9 2.4	48.61 .52	46.1 2.8
Feb. 9.8	54.19 .29	5.0 1.6	33.16 .54	5.4 2.3	12.77 .29	43.8 2.0	49.19 .61	43.4 2.3
19.8	54.48 +.30	3.6 −1.2	33.73 +.59	3.4 −1.7	13.06 +.30	42.0 −1.5	49.84 +.68	41.4 −1.8
29.8	54.78 .30	2.6 0.8	34.35 .63	2.1 1.0	13.37 .31	40.7 1.0	50.55 .73	40.0 1.2
Mar. 10.8	55.08 .30	2.0 −0.4	34.99 .65	1.4 −0.4	13.69 .31	40.0 −0.5	51.29 .75	39.2 −0.5
20.7	55.38 .29	1.8 0.0	35.64 .64	1.4 +0.3	14.00 .31	39.8 +0.1	52.04 .74	39.0 +0.2
30.7	55.67 .28	2.0 +0.4	36.27 .61	2.0 1.0	14.31 .30	40.2 0.6	52.77 .71	39.6 0.9
Apr. 9.7	55.95 +.27	2.6 +0.8	36.86 +.57	3.3 +1.6	14.61 +.29	41.0 +1.1	53.47 +.66	40.8 +1.5
19.7	56.22 .26	3.6 1.1	37.40 .51	5.1 2.1	14.89 .27	42.4 1.5	54.10 .59	42.5 2.0
29.6	56.47 .24	4.9 1.4	37.87 .44	7.4 2.5	15.15 .25	44.1 1.9	54.65 .51	44.8 2.4
May 9.6	56.69 .21	6.5 1.6	38.26 .35	10.2 2.9	15.39 .22	46.1 2.2	55.11 .41	47.5 2.8
19.6	56.89 .18	8.2 1.8	38.56 .25	13.2 3.1	15.60 .19	48.4 2.4	55.46 .30	50.4 3.1
29.6	57.06 +.15	10.0 +1.9	38.77 +.15	16.4 +3.2	15.77 +.16	50.9 +2.5	55.70 +.18	53.6 +3.2
June 8.5	57.20 .12	11.9 1.9	38.87 +.05	19.7 3.3	15.91 .12	53.4 2.5	55.82 +.06	56.9 3.3
18.5	57.30 .08	13.8 1.8	38.88 −.05	23.0 3.3	16.01 .08	55.9 2.5	55.82 −.07	60.2 3.2
28.5	57.36 .04	15.6 1.7	38.77 .15	26.2 3.1	16.07 +.04	58.4 2.4	55.69 .19	63.4 3.1
July 8.4	57.39 +.01	17.3 1.6	38.57 .25	29.3 2.9	16.08 −.01	60.7 2.2	55.44 .30	66.4 2.9
18.4	57.37 −.03	18.8 +1.4	38.28 −.34	32.0 +2.6	16.05 −.05	62.9 +2.0	55.09 −.41	69.2 +2.6
28.4	57.32 .07	20.1 1.2	37 89 .42	34.5 2.2	15.98 .09	64.8 1.8	54.63 .51	71.7 2.3
Aug. 7.4	57.23 .10	21.3 1.0	37.43 .49	36.5 1.8	15.87 .13	66.4 1.5	54.08 .59	73.8 1.9
17.3	57.11 .13	22.2 0.8	36.91 .55	38.2 1.4	15.72 .16	67.7 1.1	53.44 .66	75.5 1.5
27.3	56.97 .15	22.8 0.5	36.33 .60	39.3 0.9	15.55 .18	68.6 0.8	52.75 .72	76.7 1.0
Sept. 6.3	56.80 −.17	23.2 +0.2	35.71 −.63	40.0 +0.4	15.36 −.20	69.2 +0.4	52.00 −.76	77.5 +0.5
16.2	56.63 .18	23.2 −0.1	35.07 .64	40.2 −0.1	15.15 .21	69.4 0.0	51.23 .78	77.7 0.0
26.2	56.45 .17	23.0 0.3	34.42 .64	39.8 0.6	14.94 .21	69.2 −0.4	50.45 .77	77.4 −0.5
Oct. 6.2	56.28 .16	22.6 0.6	33.79 .62	38.9 1.1	14.73 .20	68.6 0.8	49.68 .75	76.6 1.1
16.2	56.13 .14	21.8 0.9	33.19 .58	37.5 1.6	14.54 .18	67.6 1.2	48.95 .71	75.3 1.6
26.1	56.00 −.11	20.7 −1.2	32.64 −.52	35.6 −2.1	14.38 −.15	66.2 −1.6	48.27 −.64	73.4 −2.1
Nov. 5.1	55.91 .07	19.4 1.5	32.15 .44	33.2 2.6	14.25 .11	64.4 1.9	47.67 .56	71.1 2.5
15.1	55.86 −.03	17.8 1.7	31.75 .35	30.4 3.0	14.16 .07	62.3 2.3	47.16 .46	68.4 2.9
25.1	55.86 +.02	15.9 1.9	31.45 .25	27.2 3.3	14.11 −.02	59.9 2.5	46.76 .34	65.3 3.2
Dec. 5.0	55.90 .07	13.9 2.1	31.26 .14	23.8 3.5	14.12 +.03	57.2 2.7	46.49 .21	61.9 3.5
15.0	55.99 +.11	11.7 −2.2	31.18 −.02	20.1 −3.7	14.18 +.08	54.4 −2.9	46.35 −.07	58.3 −3.7
25.0	56.13 .16	9.4 2.3	31.21 +.10	16.4 3.7	14.29 .13	51.5 3.0	46.35 +.07	54.6 3.7
35.0	56.31 +.20	7.1 −2.3	31.37 +.22	12.7 −3.6	14.44 +.18	48.5 −3.0	46.49 +.21	50.9 −3.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Draconis.		γ^2 Sagittarii.		μ Sagittarii.		η Serpentis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	$17^{h}\ 54^{m}$	$+51^{\circ}\ 29'$	$17^{h}\ 58^{m}$	$-30^{\circ}\ 25'$	$18^{h}\ 7^{m}$	$-21^{\circ}\ 5'$	$18^{h}\ 15^{m}$	$-\ 2^{\circ}\ 55'$
	s	″	s	″	s	″	s	″
Jan. 1.0	3.40 +.14	57.0 −3.6	49.63 +.20	34.1 +0.3	15.89 +.18	17.2 −0.3	41.10 +.15	41.0 −1.3
11.0	3.57 .20	53.4 3.4	49.85 .24	33.9 0.2	16.09 .22	17.5 0.3	41.27 .18	42.3 1.4
20.9	3.80 .25	50.1 3.2	50.11 .27	33.7 0.1	16.32 .25	17.8 0.3	41.47 .21	43.6 1.3
30.9	4.08 .30	47.0 2.8	50.40 .30	33.6 +0.1	16.59 .27	18.1 0.3	41.70 .24	44.9 1.2
Feb. 9.9	4.40 .34	44.4 2.4	50.71 .32	33.6 0.0	16.87 .29	18.4 0.3	41.96 .26	46.0 1.0
19.8	4.77 +.37	42.3 −1.8	51.05 +.34	33.6 0.0	17.17 +.31	18.7 −0.3	42.23 +.28	46.9 −0.8
29.8	5.15 .39	40.8 1.2	51.39 .35	33.7 −0.1	17.49 .32	18.9 0.2	42.51 .29	47.6 0.6
Mar. 10.8	5.56 .40	39.9 −0.5	51.74 .35	33.7 0.1	17.81 .32	19.1 −0.1	42.81 .30	48.0 −0.3
20.8	5.96 .40	39.6 +0.1	52.09 .35	33.8 0.1	18.14 .32	19.1 0.0	43.11 .30	48.2 0.0
30.7	6.36 .39	40.0 0.7	52.44 .35	33.9 0.1	18.46 .32	19.1 +0.1	43.41 .30	48.0 +0.3
Apr. 9.7	6.75 +.37	41.0 +1.3	52.79 +.34	34.0 −0.1	18.79 +.32	18.9 +0.2	43.70 +.29	47.6 +0.5
19.7	7.12 .35	42.6 1.8	53.12 .33	34.1 0.1	19.10 .31	18.7 0.2	43.99 .28	47.0 0.7
29.6	7.45 .31	44.7 2.3	53.44 .31	34.3 0.2	19.40 .29	18.5 0.2	44.27 .27	46.1 0.9
May 9.6	7.74 .27	47.3 2.7	53.74 .29	34.5 0.2	19.68 .27	18.2 0.3	44.53 .25	45.1 1.0
19.6	7.99 .22	50.1 3.0	54.02 .26	34.7 0.3	19.94 .25	17.9 0.2	44.77 .23	44.0 1.1
29.6	8.19 +.17	53.2 +3.1	54.26 +.23	35.0 −0.3	20.18 +.22	17.7 +0.2	44.99 +.20	42.8 +1.2
June 8.5	8.33 .11	56.4 3.2	54.47 .19	35.4 0.4	20.38 .19	17.5 0.2	45.18 .17	41.6 1.2
18.5	8.41 +.05	59.6 3.2	54.64 .15	35.8 0.5	20.55 .15	17.3 +0.1	45.33 .14	40.4 1.2
28.5	8.44 −.01	62.8 3.1	54.77 .11	36.3 0.5	20.68 .11	17.3 0.0	45.45 .10	39.2 1.1
July 8.4	8.40 .07	65.8 2.9	54.85 .06	36.9 0.6	20.76 .06	17.2 0.0	45.53 .06	38.2 1.0
18.4	8.31 −.12	68.6 +2.7	54.89 +.01	37.4 −0.6	20.80 +.02	17.3 −0.1	45.57 +.02	37.2 +0.9
28.4	8.16 .18	71.1 2.4	54.88 −.03	38.0 0.6	20.80 −.02	17.4 0.1	45.57 −.02	36.4 0.8
Aug. 7.4	7.95 .23	73.3 2.0	54.82 .08	38.6 0.5	20.76 .06	17.5 0.1	45.52 .06	35.7 0.6
17.3	7.70 .27	75.1 1.6	54.72 .12	39.1 0.5	20.67 .10	17.7 0.2	45.44 .10	35.2 0.5
27.3	7.41 .30	76.4 1.1	54.59 .15	39.5 0.4	20.55 .13	17.8 0.2	45.33 .13	34.8 0.3
Sept. 6.3	7.09 −.33	77.3 +0.6	54.42 −.17	39.8 −0.3	20.40 −.15	18.0 −0.1	45.19 −.15	34.6 +0.2
16.3	6.76 .34	77.7 +0.1	54.24 .18	40.0 −0.2	20.24 .17	18.1 −0.1	45.03 .16	34.5 0.0
26.2	6.42 .34	77.6 −0.4	54.06 .18	40.1 0.0	20.07 .17	18.2 0.0	44.86 .17	34.5 −0.1
Oct. 6.2	6.08 .33	77.0 0.9	53.87 .17	40.0 +0.1	19.90 .16	18.2 0.0	44.70 .16	34.7 0.3
16.2	5.76 .31	75.9 1.4	53.70 .15	39.8 0.2	19.74 .14	18.2 0.0	44.54 .15	35.0 0.4
26.2	5.47 −.27	74.2 −1.9	53.56 −.12	39.4 +0.3	19.61 −.12	18.2 0.0	44.41 −.12	35.5 −0.6
Nov. 5.1	5.21 .22	72.2 2.3	53.46 .08	39.0 0.4	19.50 .08	18.2 0.0	44.30 .09	36.2 0.7
15.1	5.01 .17	69.6 2.7	53.40 −.03	38.6 0.4	19.44 −.04	18.1 0.0	44.23 .05	36.9 0.9
25.1	4.87 .11	66.7 3.0	53.39 +.02	38.1 0.5	19.43 +.01	18.1 0.0	44.20 −.01	37.9 1.0
Dec. 5.0	4.79 −.04	63.5 3.3	53.43 .07	37.6 0.5	19.46 .06	18.2 −0.1	44.22 +.04	38.9 1.1
15.0	4.78 +.03	60.1 −3.5	53.53 +.12	37.2 +0.4	19.54 +.11	18.3 −0.1	44.28 +.08	40.1 −1.2
25.0	4.84 .10	56.5 3.6	53.68 .17	36.8 0.3	19.67 .15	18.5 0.2	44.38 .12	41.4 1.3
35.0	4.97 +.16	52.9 −3.6	53.88 +.22	36.5 +0.3	19.85 +.20	18.7 −0.3	44.53 +.16	42.7 −1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	1 Aquilæ.		*α* Lyræ. (*Vega.*)		*σ* Octantis.		*β* Lyræ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	$18^{h}\ 29^{m}$	$-\ 8^{\circ}\ 19'$	$18^{h}\ 33^{m}$	$+38^{\circ}\ 40'$	18^{h}	$-89^{\circ}\ 15'$	$18^{h}\ 46^{m}$	$+33^{\circ}\ 13'$
	s	″	s	″	m s s	″	s	″
Jan. 1.0	17.58 +.15	16.3 −1.0	14.62 +.09	52.5 −3.2	43 45.9+ 4.4	59.9 +3.3	3.31 +.09	67.7 −3.0
11.0	17.74 .18	17.3 1.0	14.74 .14	49.3 3.2	43 51.9 7.6	56.7 3.2	3.42 .13	64.7 3.0
20.9	17.94 .21	18.3 0.9	14.91 .19	46.2 3.0	44 1.0 10.5	53.5 3.0	3.58 .17	61.8 2.8
30.9	18.16 .24	19.2 0.8	15.12 .23	43.3 2.8	44 12.9 13.1	50.6 2.7	3.77 .21	59.0 2.6
Feb. 9.9	18.41 .26	20.0 0.7	15.37 .27	40.7 2.4	44 27.2 15.3	48.0 2.4	4.00 .24	56.5 2.3
19.9	18.68 +.28	20.6 −0.6	15.65 +.29	38.5 −1.9	44 43.6+17.2	45.7 +2.0	4.26 +.27	54.4 −1.9
29.8	18.97 .29	21.1 0.4	15.96 .31	36.8 1.4	45 1.6 18.6	43.9 1.6	4.54 .29	52.8 1.4
Mar. 10.8	19.26 .30	21.3 −0.2	16.28 .33	35.7 0.8	45 20.8 19.6	42.5 1.1	4.85 .31	51.7 0.9
20.8	19.56 .30	21.4 +0.1	16.62 .34	35.2 −0.2	45 40.7 20.1	41.7 0.7	5.17 .32	51.1 −0.3
30.8	19.87 +.30	21.2 0.3	16.96 .34	35.3 +0.4	46 1.0 20.2	41.2 +0.2	5.49 .32	51.1 +0.3
Apr. 9.7	20.17 +.30	20.8 +0.5	17.30 +.33	35.9 +0.9	46 21.2+20.0	41.3 −0.3	5.82 +.32	51.6 +0.8
19.7	20.47 .29	20.2 0.7	17.63 .32	37.1 1.4	46 41.0 19.3	41.9 0.8	6.14 .31	52.7 1.3
29.7	20.76 .28	19.5 0.8	17.95 .30	38.8 1.9	46 59.8 18.2	42.9 1.2	6.45 .30	54.3 1.8
May 9.6	21.04 .27	18.6 0.9	18.24 .28	41.0 2.3	47 17.4 16.8	44.4 1.6	6.74 .28	56.3 2.2
19.6	21.30 .25	17.6 1.0	18.50 .25	43.5 2.6	47 33.4 15.0	46.3 2.1	7.00 .25	58.6 2.5
29.6	21.53 +.22	16.6 +1.0	18.73 +.21	46.2 +2.8	47 47.4+12.8	48.5 −2.4	7.24 +.22	61.2 +2.7
June 8.6	21.74 .19	15.6 1.0	18.92 .17	49.2 3.0	47 59.1 10.5	51.1 2.7	7.44 .18	64.0 2.8
18.5	21.91 .16	14.7 0.9	19.07 .12	52.2 3.0	48 8.3 7.8	53.9 2.9	7.60 .14	66.9 2.9
28.5	22.05 .12	13.8 0.8	19.16 .07	55.2 3.0	48 14.7 5.0	56.8 3.0	7.72 .09	69.8 2.9
July 8.5	22.14 .08	13.0 0.7	19.21 +.02	58.2 2.9	48 18.2+ 2.0	59.9 3.1	7.79 +.05	72.6 2.8
18.5	22.20 +.03	12.3 +0.6	19.21 −.03	61.0 +2.7	48 18.7− 1.0	63.0 −3.0	7.81 .00	75.3 +2.6
28.4	22.21 −.01	11.7 0.5	19.16 .08	63.6 2.4	48 16.2 4.0	66.0 2.9	7.78 −.05	77.8 2.4
Aug. 7.4	22.18 .05	11.2 0.4	19.06 .12	65.9 2.2	48 10.8 6.8	68.9 2.7	7.71 .09	80.0 2.1
17.4	22.11 .09	10.9 0.3	18.91 .16	67.9 1.8	48 2.6 9.5	71.4 2.4	7.60 .13	82.0 1.8
27.3	22.01 .12	10.6 0.2	18.73 .20	69.5 1.4	47 51.9 11.7	73.6 2.0	7.44 .17	83.6 1.4
Sept. 6.3	21.87 −.14	10.5 +0.1	18.51 −.23	70.7 +1.0	47 39.1−13.6	75.4 −1.5	7.26 −.20	84.9 +1.0
16.3	21.72 .16	10.5 0.0	18.28 .25	71.5 0.6	47 24.6 15.0	76.7 1.0	7.05 .22	85.7 0.6
26.3	21.56 .16	10.6 −0.1	18.02 .25	71.9 +0.1	47 9.1 15.7	77.4 −0.4	6.82 .23	86.2 +0.2
Oct. 6.2	21.39 .16	10.7 0.2	17.77 .25	71.8 −0.3	46 53.1 15.9	77.5 +0.2	6.59 .23	86.2 −0.2
16.2	21.24 .15	11.0 0.3	17.52 .24	71.2 0.8	46 37.3 15.4	77.0 0.8	6.37 .22	85.7 0.6
26.2	21.10 −.12	11.3 −0.4	17.30 −.22	70.2 −1.3	46 22.4−14.2	75.9 +1.4	6.16 −.20	84.9 −1.1
Nov. 5.2	20.99 .09	11.8 0.5	17.09 .18	68.7 1.7	46 8.8 12.5	74.2 1.9	5.97 .17	83.6 1.5
15.1	20.91 .05	12.3 0.6	16.93 .14	66.8 2.1	45 57.4 10.2	72.1 2.4	5.82 .13	81.9 1.9
25.1	20.88 −.01	12.9 0.7	16.81 .10	64.5 2.5	45 48.5 7.4	69.4 2.8	5.71 .09	79.8 2.2
Dec. 5.1	20.88 +.03	13.7 0.8	16.74 −.05	61.8 2.8	45 42.5 4.4	66.5 3.1	5.64 −.04	77.4 2.5
15.0	20.94 +.08	14.5 −0.9	16.72 +.01	58.9 −3.0	45 39.7− 1.1	63.3 +3.3	5.62 .00	74.7 −2.8
25.0	21.03 .12	15.4 0.9	16.75 .06	55.8 3.1	45 40.3+ 2.2	59.9 3.4	5.65 +.05	71.8 2.9
35.0	21.17 +.16	16.3 −1.0	16.84 +.11	52.6 −3.2	45 44.2+ 5.4	56.5 +3.3	5.73 +.10	68.8 −3.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	σ Sagittarii.		50 Draconis.		ζ Aquilæ.		d Sagittarii.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 18 48	° ′ −26 25	h m 18 49	° ′ +75 17	h m 19 0	° ′ +13 41	h m 19 11	° ′ −19 8
	s	″	s	″	s	″	s	″
Jan. 1.0	31.65 +.14	57.0 +0.2	46.11 −.09	77.4 −3.6	24.64 +.09	64.4 −2.1	16.64 +.11	49.4 −0.2
11.0	31.82 .18	56.8 0.2	46.10 +.08	73.9 3.5	24.75 .13	62.3 2.1	16.77 .15	49.5 0.1
20.9	32.02 .22	56.6 0.2	46.26 .24	70.3 3.4	24.90 .17	60.2 2.0	16.94 .18	49.6 0.1
30.9	32.26 .25	56.4 0.2	46.58 .39	67.0 3.2	25.08 .20	58.3 1.8	17.14 .21	49.7 −0.1
Feb. 9.9	32.52 .28	56.2 0.2	47.05 .53	63.9 2.9	25.29 .22	56.5 1.6	17.37 .24	49.8 0.0
19.9	32.81 +.30	55.9 +0.2	47.65 +.65	61.2 −2.4	25.53 +.24	55.0 −1.3	17.62 +.26	49.7 +0.1
29.9	33.11 .32	55.7 0.3	48.36 .75	59.0 1.9	25.79 .26	53.9 1 0	17.90 .28	49.6 0.2
Mar. 10.8	33.44 .33	55.4 0.3	49.15 .82	57.5 1.3	26.06 .28	53.2 0.6	18.19 .30	49.3 0.3
20.8	33.77 .34	55.0 0.3	50.00 .86	56.5 −0.6	26.35 .29	52.8 −0.1	18.50 .31	48.9 0.4
30.8	34.11 .34	54.7 0.4	50.88 .88	56.2 0.0	26.64 .30	52.9 +0.3	18.82 .32	48.4 0.5
Apr. 9.7	34.45 +.34	54.3 +0.4	51.75 +.86	56.6 +0.7	26.94 +.30	53.5 +0.7	19.14 +.32	47.9 +0.6
19.7	34.78 .33	53.8 0.4	52.59 .81	57.6 1.3	27.24 .29	54.4 1.1	19.46 .32	47.2 0.7
29.7	35.11 .32	53.4 0.4	53.37 .74	59.2 1.8	27.53 .28	55.6 1.4	19.78 .32	46.4 0.7
May 9.7	35.43 .31	53.1 0.3	54.07 .65	61.3 2.3	27.82 .27	57.2 1.7	20.09 .31	45.7 0.7
19.6	35.74 .29	52.8 0.3	54.67 .53	63.9 2.7	28.08 .25	59.0 1.9	20.39 .29	44.9 0.7
29.6	36.01 +.26	52.6 +0.2	55.14 +.41	66.8 +3.0	28.32 +.23	61.0 +2.0	20.67 +.27	44.2 +0.7
June 8.6	36.26 .23	52.4 +0.1	55.49 .27	69.9 3.2	28.54 .20	63.2 2.1	20.93 .24	43.6 0.6
18.6	36.48 .19	52.4 0.0	55.69 +.13	73.2 3.3	28.72 .17	65.3 2.1	21.15 .20	43.0 0.5
28.5	36.65 .15	52.5 −0.1	55.74 −.02	76.6 3.4	28.87 .13	67.5 2.1	21.34 .16	42.6 0.4
July 8.5	36.78 .11	52.7 0.2	55.65 .17	80.0 3.3	28.97 .08	69.5 2.0	21.48 .12	42.3 0.3
18.5	36.87 +.06	52.9 −0.3	55.41 −.31	83.3 +3.2	29.04 +.04	71.5 +1.9	21.58 +.08	42.1 +0.1
28.4	36.90 +.01	53.3 0.4	55.02 .45	86.4 3.0	29.06 .00	73.3 1.7	21.64 +.03	42.0 0.0
Aug. 7.4	36.89 −.03	53.7 0.4	54.51 .57	89.3 2.7	29.03 −.04	74.9 1.5	21.65 −.01	42.0 −0.1
17.4	36.83 .07	54.2 0.5	53.88 .68	91.8 2.4	28.97 .08	76.2 1.2	21.61 .05	42.2 0.2
27.4	36.74 .11	54.6 0.4	53.14 .78	94.0 2.0	28.86 .12	77.4 1.0	21.53 .09	42.4 0.2
Sept. 6.3	36.60 −.14	55.1 −0.4	52.32 −.86	95.7 +1.5	28.73 −.15	78.2 +0.7	21.42 −.13	42.6 −0.3
16.3	36.45 .16	55.4 0.3	51.43 .91	97.0 1.0	28.58 .17	78.8 0.4	21.28 .15	42.9 0.3
26.3	36.27 .18	55.7 0.2	50.49 .95	97.8 +0.5	28.40 .17	79.1 +0.1	21.12 .16	43.1 0.3
Oct. 6.2	36.09 .18	55.9 0.2	49.54 .95	98.1 0.0	28.23 .17	79.1 −0.2	20.96 .17	43.4 0.2
16.2	35.92 .16	56.1 −0.1	48.58 .94	97.8 −0.5	28.05 .17	78.8 0.4	20.79 .16	43.6 0.2
26.2	35.76 −.14	56.1 0.0	47.66 −.90	97.0 −1.1	27.89 −.15	78.2 −0.7	20.63 −.14	43.8 −0.2
Nov. 5.2	35.63 .11	56.0 +0.1	46.78 .83	95.7 1.6	27.75 .13	77.3 1.0	20.50 .12	44.0 0.1
15.1	35.54 .07	55.8 0.2	45.99 .74	93.9 2.1	27.63 .10	76.1 1.3	20.40 .09	44.1 0.1
25.1	35.49 −.03	55.6 0.2	45.29 .63	91.6 2.5	27.56 .06	74.7 1.5	20.34 −.04	44.3 0.1
Dec. 5.1	35.48 +.02	55.3 0.3	44.72 .50	88.8 2.9	27.52 −.02	73.1 1.7	20.31 .00	44.4 0.1
15.1	35.53 +.07	55.0 +0.3	44.29 −.35	85.7 −3.2	27.52 +.02	71.2 −1.9	20.33 +.04	44.5 −0.1
25.0	35.62 .12	54.8 0.3	44.02 .19	82.3 3.4	27.57 .07	69.2 2.0	20.40 .08	44.7 0.1
35.0	35.76 +.16	54.5 +0.2	43.91 −.03	78.8 −3.6	27.65 +.11	67.1 −2.1	20.50 +.13	44.8 −0.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Draconis.		τ Draconis.		δ Aquilæ.		κ Aquilæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 19 12	° ′ +67 27	h m 19 17	° ′ +73 8	h m 19 20	° ′ + 2 53	h m 19 31	° ′ − 7 15
	s	″	s	″	s	″	s	″
Jan. 1.0	28.03 −.07	73.4 −3.6	33.08 −.15	73.8 −3.5	1.04 +.08	51.4 −1.4	2.70 +.08	70.4 −0.8
11.0	28.02 +.03	69.8 3.6	33.00 −.01	70.2 3.5	1.15 .12	49.9 1.5	2.80 .12	71.3 0.8
21.0	28.11 .14	66.2 3.5	33.06 +.13	66.7 3.5	1.28 .15	48.5 1.4	2.93 .15	72.0 0.7
30.9	28.30 .24	62.8 3.3	33.26 .27	63.3 3.3	1.46 .18	47.2 1.3	3.10 .18	72.7 0.6
Feb. 9.9	28.60 .34	59.6 3.0	33.60 .40	60.0 3.1	1.65 .21	46.0 1.1	3.30 .21	73.3 0.5
19.9	28.98 +.42	56.8 −2.6	34.06 +.52	57.1 −2.7	1.88 +.24	45.0 −0.9	3.52 +.23	73.8 −0.3
29.9	29.44 .49	54.4 2.1	34.63 .61	54.7 2.2	2.13 .26	44.3 0.6	3.77 .25	74.0 −0.1
Mar. 10.8	29.97 .54	52.6 1.5	35.29 .69	52.9 1.6	2.39 .27	43.9 −0.3	4.03 .27	74.1 +0.1
20.8	30.54 .58	51.5 0.9	36.01 .74	51.6 1.0	2.67 .28	43.8 0.0	4.31 .29	73.9 0.3
30.8	31.13 .60	50.9 −0.2	36.77 .77	51.0 −0.3	2.96 .29	44.0 +0.4	4.61 .30	73.5 0.5
Apr. 9.8	31.74 +.60	51.1 +0.5	37.54 +.77	51.0 +0.3	3.26 +.30	44.6 +0.7	4.91 +.30	72.8 +0.7
19.7	32.34 .58	51.9 1.1	38.31 .75	51.7 1.0	3.56 .30	45.4 1.0	5.22 .31	72.0 0.9
29.7	32.91 .55	53.3 1.7	39.04 .70	53.0 1.6	3.86 .29	46.6 1.2	5.52 .30	70.9 1.1
May 9.7	33.43 .50	55.2 2.2	39.71 .64	54.8 2.1	4.15 .28	47.9 1.4	5.82 .29	69.8 1.2
19.6	33.91 .44	57.6 2.6	40.31 .55	57.2 2.5	4.43 .27	49.4 1.6	6.12 .28	68.5 1.3
29.6	34.31 +.36	60.5 +2.9	40.81 +.45	59.9 +2.9	4.69 +.25	51.1 +1.7	6.39 +.26	67.2 +1.3
June 8.6	34.63 .28	63.6 3.2	41.20 .34	63.0 3.2	4.92 .22	52.8 1.7	6.64 .24	65.9 1.3
18.6	34.86 .19	67.0 3.4	41.48 .21	66.3 3.4	5.13 .19	54.5 1.7	6.87 .21	64.7 1.2
28.5	34.99 +.09	70.4 3.5	41.63 +.08	69.7 3.5	5.30 .15	56.2 1.6	7.06 .17	63.5 1.1
July 8.5	35.03 −.01	73.9 3.4	41.65 −.04	73.2 3.4	5.44 .11	57.8 1.5	7.21 .13	62.4 1.0
18.5	34.96 −.11	77.3 +3.3	41.54 −.17	76.6 +3.3	5.53 +.07	59.3 +1.4	7.32 +.09	61.5 +0.9
28.5	34.80 .21	80.6 3.1	41.30 .30	79.9 3.2	5.58 +.03	60.6 1.2	7.38 +.04	60.7 0.7
Aug. 7.4	34.55 .30	83.6 2.9	40.94 .42	83.1 3.0	5.58 −.02	61.8 1.1	7.40 .00	60.0 0.5
17.4	34.21 .38	86.4 2.6	40.47 .53	85.9 2.7	5.54 .06	62.7 0.9	7.38 −.04	59.5 0.4
27.4	33.79 .45	88.8 2.2	39.90 .62	88.4 2.3	5.47 .09	63.5 0.7	7.32 .08	59.2 0.3
Sept. 6.3	33.30 −.51	90.9 +1.8	39.24 −.69	90.5 +1.9	5.36 −.12	64.1 +0.5	7.22 −.11	59.0 +0.1
16.3	32.77 .56	92.5 1.4	38.51 .75	92.2 1.5	5.22 .14	64.5 0.3	7.09 .13	58.9 0.0
26.3	32.19 .58	93.6 0.9	37.73 .79	93.5 1.0	5.07 .16	64.6 +0.1	6.95 .15	59.0 −0.1
Oct. 6.3	31.59 .60	94.2 +0.4	36.92 .82	94.2 +0.5	4.91 .16	64.6 −0.1	6.79 .16	59.1 0.2
16.2	30.99 .60	94.3 −0.2	36.10 .82	94.4 −0.1	4.74 .15	64.4 0.3	6.63 .15	59.4 0.3
26.2	30.40 −.58	93.8 −0.7	35.28 −.80	94.0 −0.6	4.59 −.14	64.0 −0.5	6.48 −.14	59.7 −0.4
Nov. 5.2	29.83 .54	92.8 1.3	34.50 .75	93.1 1.2	4.46 .12	63.3 0.7	6.35 .12	60.2 0.5
15.2	29.32 .49	91.2 1.8	33.78 .68	91.7 1.7	4.35 .09	62.5 0.9	6.24 .09	60.7 0.5
25.1	28.87 .41	89.1 2.3	33.13 .60	89.7 2.2	4.27 .06	61.6 1.1	6.16 .06	61.3 0.6
Dec. 5.1	28.49 .33	86.5 2.7	32.58 .49	87.2 2.6	4.23 −.02	60.4 1.2	6.12 −.02	61.9 0.7
15.1	28.21 −.24	83.6 −3.1	32.15 −.37	84.4 −3.0	4.23 +.02	59.2 −1.3	6.12 +.02	62.7 −0.8
25.0	28.02 .14	80.4 3.4	31.84 .24	81.2 3.3	4.27 .06	57.8 1.4	6.15 .06	63.5 0.8
35.0	27.94 −.03	76.9 −3.6	31.67 −.10	77.8 −3.5	4.35 +.10	56.4 −1.4	6.23 +.10	64.3 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Aquilæ.		α Aquilæ. (*Altair.*)		ε Draconis.		β Aquilæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 19 41	° ′ +10 20	h m 19 45	° ′ + 8 34	h m 19 48	° ′ +69 59	h m 19 49	° ′ + 6 7
	s	″	s	″	s	″	s	″
Jan. 1.0	5.41 +.06	54.0 −1.8	28.74 +.05	52.6 −1.6	27.93 −.19	32.7 −3.3	58.40 +.05	66.3 −1.5
11.0	5.48 .09	52.2 1.8	28.82 .09	50.9 1.7	27.80 −.07	29.3 3.4	58.48 .09	64.8 1.5
21.0	5.59 .13	50.4 1.7	28.93 .13	49.2 1.6	27.79 +.05	25.8 3.5	58.58 .12	63.2 1.5
31.0	5.74 .16	48.7 1.6	29.07 .16	47.7 1.5	27.89 .16	22.3 3.4	58.72 .15	61.8 1.4
Feb. 9.9	5.91 .19	47.2 1.4	29.24 .19	46.2 1.3	28.12 .28	19.0 3.2	58.89 .18	60.5 1.2
19.9	6.12 +.22	45.9 −1.2	29.44 +.21	45.0 −1.1	28.45 +.38	16.0 −2.8	59.09 +.21	59.4 −1.0
29.9	6.35 .24	44.9 0.9	29.67 .24	44.1 0.8	28.88 .47	13.3 2.4	59.31 .23	58.6 0.7
Mar. 10.9	6.60 .26	44.2 0.5	29.92 .26	43.5 −0.4	29.39 .55	11.2 1.9	59.55 .25	58.1 −0.4
20.8	6.87 .27	43.9 −0.1	30.19 .28	43.3 0.0	29.98 .61	9.6 1.3	59.82 .27	57.9 0.0
30.8	7.15 .29	44.0 +0.3	30.47 .29	43.4 +0.3	30.61 .65	8.6 −0.6	60.10 .29	58.1 +0.4
Apr. 9.8	7.45 +.30	44.5 +0.7	30.76 +.30	44.0 +0.7	31.27 +.67	8.3 0.0	60.39 +.30	58.6 +0.7
19.8	7.75 .30	45.4 1.0	31.07 .30	44.8 1.0	31.94 .66	8.6 +0.6	60.69 .30	59.4 1.0
29.7	8.05 .30	46.6 1.3	31.37 .30	46.0 1.3	32.59 .64	9.5 1.2	60.99 .30	60.6 1.3
May 9.7	8.35 .29	48.1 1.6	31.67 .29	47.5 1.6	33.22 .60	11.1 1.8	61.29 .29	62.0 1.5
19.7	8.63 .28	49.8 1.8	31.96 .28	49.2 1.8	33.79 .54	13.2 2.3	61.59 .28	63.7 1.7
29.6	8.90 +.26	51.7 +2.0	32.23 +.26	51.1 +1.9	34.30 +.47	15.7 +2.7	61.86 +.26	65.4 +1.8
June 8.6	9.15 .23	53.7 2.1	32.48 .24	53.1 2.0	34.72 .38	18.6 3.1	62.12 .24	67.3 1.9
18.6	9.37 .20	55.8 2.1	32.71 .21	55.2 2.0	35.05 .28	21.8 3.3	62.34 .21	69.3 1.9
28.6	9.55 .17	57.9 2.1	32.90 .17	57.2 2.0	35.29 .18	25.3 3.5	62.54 .18	71.2 1.9
July 8.5	9.70 .13	60.0 2.0	33.05 .13	59.1 1.9	35.41 +.07	28.8 3.5	62.70 .14	73.0 1.8
18.5	9.80 +.08	61.9 +1.9	33.16 +.09	61.0 +1.8	35.42 −.04	32.3 +3.5	62.81 +.09	74.7 +1.7
28.5	9.86 +.04	63.7 1.7	33.23 +.04	62.7 1.6	35.32 .15	35.8 3.4	62.88 .05	76.3 1.5
Aug. 7.4	9.88 .00	65.3 1.5	33.25 .00	64.2 1.4	35.12 .25	39.1 3.2	62.91 +.01	77.7 1.3
17.4	9.85 −.05	66.7 1.3	33.23 −.04	65.6 1.2	34.81 .35	42.3 3.0	62.90 −.03	78.9 1.1
27.4	9.78 .09	67.9 1.0	33.17 .08	66.7 1.0	34.41 .44	45.1 2.7	62.84 .07	79.9 0.9
Sept. 6.4	9.68 −.12	68.8 +0.8	33.07 −.11	67.6 +0.8	33.92 −.52	47.6 +2.3	62.75 −.10	80.7 +0.7
16.3	9.55 .14	69.4 0.5	32.94 .14	68.2 0.5	33.37 .58	49.7 1.9	62.63 .13	81.3 0.4
26.3	9.40 .16	69.9 +0.3	32.80 .15	68.6 +0.3	32.76 .63	51.4 1.4	62.48 .15	81.6 +0.2
Oct. 6.3	9.23 .17	70.0 0.0	32.64 .16	68.8 0.0	32.11 .66	52.6 0.9	62.32 .16	81.7 0.0
16.3	9.06 .16	69.9 −0.2	32.47 .16	68.7 −0.2	31.44 .67	53.2 +0.4	62.16 .16	81.5 −0.2
26.2	8.90 −.15	69.5 −0.5	32.31 −.15	68.3 −0.5	30.77 −.66	53.3 −0.2	62.01 −.15	81.2 −0.5
Nov. 5.2	8.75 .13	68.9 0.8	32.17 .13	67.7 0.7	30.11 .64	52.9 0.7	61.86 .13	80.6 0.7
15.2	8.63 .11	68.0 1.0	32.04 .11	66.9 0.9	29.49 .60	51.9 1.3	61.74 .11	79.8 0.9
25.2	8.53 .08	66.9 1.2	31.95 .06	65.9 1.1	28.92 .53	50.3 1.8	61.64 .08	78.8 1.1
Dec. 5.1	8.47 .04	65.6 1.4	31.89 .04	64.6 1.3	28.43 .45	48.2 2.3	61.58 .05	77.7 1.3
15.1	8.44 −.01	64.1 −1.6	31.86 −.01	63.2 −1.5	28.02 −.36	45.7 −2.7	61.55 −.01	76.4 −1.4
25.1	8.46 +.03	62.4 1.7	31.87 +.03	61.7 1.6	27.70 .26	42.8 3.1	61.56 +.03	74.9 1.5
35.1	8.51 +.07	60.7 −1.8	31.93 +.07	60.1 −1.6	27.50 −.15	39.5 −3.4	61.61 +.07	73.4 −1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	τ Aquilæ.		a^2 Capricorni.		κ Cephei.		a Pavonis.	
	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.
	h m 19 58	° ′ + 6 58	h m 20 12	° ′ -12 52	h m 20 12	° ′ +77 22	h m 20 17	° ′ -57 4
	s	″	s	″	s	″	s	″
Jan. 1.1	49.82 +.04	16.6 -1.5	1.63 +.05	55.5 -0.4	25.08 -.48	70.1 -3.1	3.30 +.03	64.4 +2.1
11.0	49.88 .08	15.0 1.5	1.70 .08	55.9 0.3	24.70 .29	66.9 3.3	3.37 .09	62.2 2.2
21.0	49.98 .11	13.5 1.5	1.80 .12	56.2 0.3	24.51 -.10	63.5 3.4	3.51 .17	59.9 2.3
31.0	50.11 .14	12.0 1.4	1.93 .15	56.4 0.2	24.50 +.09	60.1 3.4	3.71 .23	57.5 2.4
Feb. 10.0	50.27 .17	10.7 1.2	2.09 .18	56.6 -0.1	24.69 .28	56.7 3.3	3.97 .29	55.1 2.4
19.9	50.46 +.20	9.6 -0.9	2.29 +.21	56.5 +0.1	25.06 +.45	53.5 -3.0	4.29 +.34	52.8 +2.3
29.9	50.67 .23	8.8 0.7	2.50 .23	56.4 0.3	25.60 .61	50.7 2.6	4.66 .39	50.5 2.2
Mar. 10.9	50.91 .25	8.2 -0.4	2.75 .25	56.0 0.5	26.29 .75	48.3 2.1	5.07 .43	48.4 2.0
20.8	51.17 .27	8.0 0.0	3.01 .27	55.5 0.6	27.11 .86	46.4 1.6	5.52 .46	46.5 1.8
30.8	51.45 .28	8.2 +0.4	3.30 .29	54.8 0.8	28.02 .94	45.0 1.0	6.00 .49	44.8 1.6
Apr. 9.8	51.74 +.29	8.8 +0.7	3.60 +.30	53.9 +1.0	28.99 +.98	44.3 -0.4	6.50 +.51	43.4 +1.3
19.8	52.04 .30	9.6 1.0	3.91 .31	52.8 1.1	29.99 1.00	44.3 +0.2	7.03 .53	42.2 1.0
29.7	52.34 .30	10.8 1.3	4.22 .32	51.7 1.2	30.98 .97	44.8 0.9	7.56 .53	41.3 0.7
May 9.7	52.64 .30	12.3 1.5	4.54 .32	50.4 1.3	31.94 .92	46.0 1.5	8.09 .53	40.8 +0.4
19.7	52.94 .29	13.9 1.7	4.86 .31	49.1 1.3	32.82 .84	47.8 2.0	8.61 .51	40.5 0.0
29.7	53.22 +.27	15.8 +1.9	5.16 +.29	47.8 +1.3	33.62 +.73	50.0 +2.4	9.12 +.49	40.7 -0.3
June 8.6	53.48 .25	17.7 2.0	5.44 .27	46.6 1.2	34.29 .61	52.7 2.8	9.59 .45	41.2 0.7
18.6	53.71 .22	19.7 2.0	5.71 .24	45.4 1.1	34.83 .46	55.7 3.1	10.02 .41	42.0 1.0
28.6	53.91 .18	21.7 2.0	5.94 .21	44.4 1.0	35.22 .30	59.0 3.3	10.40 .35	43.2 1.3
July 8.5	54.08 .14	23.6 1.9	6.13 .17	43.5 0.8	35.44 +.14	62.4 3.5	10.72 .28	44.6 1.6
18.5	54.20 +.10	25.4 +1.8	6.28 +.13	42.7 +0.7	35.49 -.03	66.0 +3.5	10.96 +.21	46.3 -1.8
28.5	54.28 .06	27.1 1.6	6.39 .08	42.1 0.5	35.38 .19	69.5 3.5	11.13 .14	48.2 1.9
Aug. 7.5	54.32 +.01	28.6 1.4	6.45 +.04	41.7 0.3	35.10 .36	73.0 3.4	11.23 +.06	50.2 2.0
17.4	54.31 -.03	29.8 1.2	6.47 -.01	41.5 +0.2	34.66 .51	76.3 3.2	11.24 -.02	52.2 2.0
27.4	54.26 .07	30.9 1.0	6.44 .05	41.4 0.0	34.08 .65	79.4 3.0	11.18 .10	54.2 1.9
Sept. 6.4	54.17 -.10	31.8 +0.7	6.37 -.08	41.4 -0.1	33.36 -.78	82.2 +2.7	11.05 -.17	56.1 -1.8
16.4	54.06 .13	32.4 0.5	6.27 .11	41.5 0.2	32.52 .89	84.7 2.3	10.85 .22	57.8 1.6
26.3	53.92 .15	32.8 +0.3	6.14 .13	41.8 0.3	31.58 .97	86.8 1.9	10.60 .26	59.3 1.3
Oct. 6.3	53.76 .16	32.9 0.0	6.00 .15	42.1 0.3	30.57 1.03	88.4 1.4	10.32 .29	60.5 1.0
16.3	53.60 .16	32.9 -0.2	5.84 .15	42.4 0.4	29.51 1.07	89.5 0.9	10.02 .31	61.2 0.6
26.2	53.44 -.15	32.6 -0.4	5.69 -.15	42.8 -0.4	28.43-1.08	90.1 +0.3	9.71 -.30	61.6 -0.2
Nov. 5.2	53.29 .14	32.0 0.7	5.55 .13	43.2 0.4	27.35 1.06	90.1 -0.3	9.41 .28	61.5 +0.3
15.2	53.17 .12	31.2 0.9	5.42 .10	43.6 0.4	26.30 1.02	89.6 0.8	9.15 .25	61.1 0.7
25.2	53.07 .09	30.3 1.1	5.33 .08	44.0 0.4	25.31 .94	88.5 1.4	8.92 .20	60.2 1.1
Dec. 5.1	53.00 .05	29.2 1.2	5.26 .06	44.4 0.4	24.40 .84	86.8 1.9	8.75 .14	58.9 1.5
15.1	52.96 -.02	27.9 -1.4	5.23 -.01	44.8 -0.4	23.62 -.72	84.6 -2.4	8.64 -.08	57.2 +1.8
25.1	52.97 +.02	26.5 1.5	5.24 +.02	45.2 0.4	22.97 .57	82.0 2.8	8.60 -.01	55.3 2.0
35.1	53.01 +.06	24.9 -1.5	5.28 +.06	45.6 -0.4	22.49 -.40	79.0 -3.1	8.62 +.06	53.2 +2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Cygni.		π Capricorni.		ε Delphini.		Groombridge 3241.	
	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.
	h m 20 18	+39° 51′	h m 20 21	−18° 33′	h m 20 28	+10° 55′	h m 20 30	+72° 9′
	s	″	s	″	s	″	s	″
Jan. 1.1	18.91 −.04	37.1 −2.8	6.26 +.04	66.9 0.0	1.21 +.01	64.7 −1.6	23.71 −.35	58.2 −3.0
11.0	18.90 +.01	34.2 2.9	6.32 .08	66.9 0.0	1.23 .05	63.0 1.6	23.43 .22	55.1 3.2
21.0	18.94 .06	31.3 2.9	6.41 .11	66.8 +0.1	1.30 .08	61.4 1.6	23.28 −.09	51.8 3.4
31.0	19.02 .11	28.4 2.8	6.54 .14	66.7 0.2	1.39 .11	59.8 1.5	23.25 +.04	48.4 3.4
Feb. 10.0	19.15 .15	25.6 2.7	6.70 .17	66.4 0.3	1.52 .14	58.3 1.4	23.36 .17	45.0 3.3
19.9	19.32 +.19	23.0 −2.4	6.89 +.20	66.0 +0.4	1.68 +.17	57.0 −1.1	23.59 +.30	41.8 −3.1
29.9	19.53 .23	20.8 2.0	7.11 .23	65.5 0.6	1.87 .20	56.0 0.8	23.95 .42	38.8 2.7
Mar. 10.9	19.79 .27	19.0 1.5	7.35 .26	64.9 0.7	2.09 .23	55.3 0.5	24.43 .52	36.3 2.3
20.9	20.07 .30	17.8 1.0	7.62 .28	64.1 0.8	2.34 .25	55.0 −0.2	24.99 .60	34.3 1.8
30.8	20.38 .32	17.0 −0.5	7.91 .30	63.2 1.0	2.60 .27	55.1 +0.2	25.63 .67	32.8 1.2
Apr. 9.8	20.72 +.34	16.8 +0.1	8.21 +.31	62.2 +1.1	2.88 +.29	55.5 +0.6	26.33 +.71	31.9 −0.5
19.8	21.06 .35	17.2 0.7	8.53 .32	61.0 1.2	3.18 .30	56.3 1.0	27.06 .73	31.7 +0.1
29.8	21.42 .35	18.2 1.2	8.86 .33	59.8 1.2	3.48 .31	57.4 1.3	27.80 .73	32.1 0.7
May 9.7	21.77 .34	19.7 1.7	9.19 .33	58.6 1.2	3.79 .30	58.9 1.6	28.52 .71	33.2 1.3
19.7	22.11 .33	21.6 2.1	9.51 .32	57.4 1.2	4.09 .30	60.6 1.8	29.21 .66	34.8 1.9
29.7	22.43 +.31	24.0 +2.5	9.83 +.31	56.2 +1.1	4.39 +.29	62.6 +2.0	29.84 +.59	36.9 +2.4
June 8.6	22.72 .28	26.6 2.8	10.13 .29	55.2 1.0	4.66 .27	64.7 2.1	30.40 .51	39.5 2.8
18.6	22.98 .24	29.6 3.0	10.40 .26	54.2 0.9	4.92 .24	66.9 2.2	30.86 .41	42.5 3.1
28.6	23.20 .20	32.7 3.1	10.65 .23	53.4 0.7	5.14 .21	69.1 2.2	31.23 .30	45.7 3.3
July 8.6	23.37 .15	35.9 3.2	10.85 .19	52.7 0.6	5.33 .17	71.2 2.1	31.47 .19	49.2 3.5
18.5	23.49 +.09	39.1 +3.2	11.02 +.14	52.3 +0.4	5.48 +.13	73.3 +2.0	31.61 +.07	52.8 +3.6
28.5	23.56 +.04	42.2 3.1	11.14 .10	52.0 +0.2	5.58 .08	75.3 1.9	31.61 −.05	56.4 3.6
Aug. 7.5	23.57 −.01	45.2 2.9	11.22 +.05	51.9 0.0	5.64 +.04	77.1 1.7	31.50 .17	60.0 3.5
17.4	23.53 .06	48.0 2.7	11.24 .00	52.0 −0.1	5.65 −.01	78.6 1.5	31.27 .28	63.4 3.3
27.4	23.44 .11	50.5 2.4	11.22 −.04	52.2 0.2	5.63 .05	80.0 1.2	30.93 .39	66.7 3.1
Sept. 6.4	23.31 −.15	52.8 +2.1	11.16 −.08	52.5 −0.3	5.56 −.08	81.1 +1.0	30.49 −.49	69.7 +2.8
16.4	23.13 .19	54.6 1.7	11.07 .11	52.9 0.4	5.46 .11	82.0 0.8	29.96 .57	72.3 2.4
26.3	22.93 .22	56.1 1.3	10.94 .13	53.3 0.4	5.33 .14	82.7 0.5	29.35 .64	74.6 2.0
Oct. 6.3	22.70 .23	57.2 0.8	10.79 .15	53.8 0.4	5.18 .15	83.0 +0.3	28.68 .69	76.4 1.6
16.3	22.46 .24	57.8 +0.4	10.64 .16	54.2 0.4	5.03 .16	83.1 0.0	27.97 .72	77.7 1.1
26.2	22.22 −.24	58.0 −0.1	10.48 −.15	54.6 −0.4	4.87 −.15	83.0 −0.3	27.24 −.74	78.5 +0.5
Nov. 5.2	21.99 .23	57.6 0.6	10.34 .14	55.0 0.3	4.72 .14	82.5 0.5	26.50 .73	78.7 0.0
15.2	21.77 .21	56.8 1.0	10.21 .12	55.3 0.3	4.58 .12	81.9 0.8	25.78 .70	78.4 −0.6
25.2	21.58 .18	55.6 1.5	10.10 .09	55.6 0.2	4.46 .10	81.0 1.0	25.09 .66	77.5 1.2
Dec. 5.1	21.42 .14	53.9 1.9	10.03 .06	55.8 0.2	4.37 .07	79.8 1.2	24.46 .59	76.0 1.7
15.1	21.29 −.10	51.8 −2.3	9.99 −.02	56.0 −0.1	4.31 −.04	78.5 −1.4	23.91 −.51	74.0 −2.2
25.1	21.21 .06	49.3 2.6	9.99 +.02	56.1 −0.1	4.29 −.01	77.0 1.5	23.44 .41	71.5 2.7
35.1	21.17 −.02	46.6 −2.8	10.03 +.06	56.1 0.0	4.30 +.03	75.4 −1.6	23.09 −.30	68.6 −3.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cygni.		μ Aquarii.		12 Year Cat. 1879.		ν Cygni.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 20 37	° ′ +44 53	h m 20 46	° ′ − 9 23	h m 20 52	° ′ +80 8	h m 20 53	° ′ +40 44
	s	″	s	″	s	″	s	″
Jan. 1.1	42.61 −.07	38.9 −2.7	47.75 +.01	28.5 −0.5	21.25 −.82	52.7 −2.7	6.52 −.08	64.3 −2.6
11.1	42.56 −.02	36.1 2.9	47.78 .05	29.0 0.5	20.55 .60	49.9 3.0	6.47 −.03	61.6 2.7
21.0	42.56 +.03	33.1 3.0	47.84 .08	29.4 0.4	20.06 .37	46.8 3.2	6.46 +.02	58.8 2.8
31.0	42.62 .08	30.1 3.0	47.94 .11	29.8 0.3	19.81 −.13	43.5 3.3	6.50 .06	56.0 2.8
Feb. 10.0	42.72 .13	27.1 2.8	48.06 .14	30.0 −0.2	19.80 +.11	40.1 3.3	6.59 .11	53.2 2.7
20.0	42.87 +.18	24.4 −2.6	48.22 +.17	30.1 0.0	20.04 +.35	36.9 −3.2	6.72 +.15	50.6 −2.5
29.9	43.07 .22	21.9 2.2	48.40 .20	29.9 +0.2	20.51 .57	33.8 2.9	6.89 .20	48.3 2.2
Mar. 10.9	43.31 .26	19.9 1.8	48.62 .23	29.6 0.4	21.19 .78	31.0 2.5	7.11 .24	46.3 1.8
20.9	43.60 .30	18.3 1.3	48.85 .25	29.1 0.6	22.06 .95	28.7 2.0	7.37 .27	44.8 1.3
30.8	43.91 .33	17.3 0.7	49.11 .27	28.3 0.8	23.09 1.08	26.9 1.5	7.66 .30	43.8 0.8
Apr. 9.8	44.26 +.35	16.9 −0.1	49.39 +.29	27.4 +1.0	24.24+1.18	25.7 −0.9	7.98 +.33	43.3 −0.2
19.8	44.62 .37	17.1 +0.5	49.69 .30	26.2 1.2	25.46 1.24	25.1 −0.3	8.32 .35	43.4 +0.4
29.8	44.99 .37	17.8 1.0	50.00 .31	24.9 1.4	26.71 1.25	25.1 +0.3	8.67 .36	44.1 1.0
May 9.7	45.37 .37	19.1 1.5	50.32 .32	23.5 1.5	27.95 1.22	25.7 0.9	9.03 .36	45.3 1.5
19.7	45.74 .36	20.9 2.0	50.63 .31	22.0 1.5	29.15 1.15	27.0 1.5	9.39 .35	47.0 1.9
29.7	46.09 +.34	23.2 +2.4	50.94 +.30	20.4 +1.5	30.25+1.04	28.8 +2.0	9.74 +.33	49.2 +2.3
June 8.7	46.41 .31	25.8 2.8	51.24 .29	18.9 1.5	31.23 .90	31.1 2.5	10.06 .31	51.7 2.6
18.6	46.70 .27	28.7 3.0	51.52 .27	17.4 1.4	32.06 .74	33.8 2.9	10.35 .27	54.5 2.9
28.6	46.94 .22	31.9 3.2	51.77 .24	16.1 1.3	32.72 .56	36.8 3.2	10.61 .23	57.5 3.1
July 8.6	47.14 .17	35.1 3.3	51.99 .20	14.8 1.2	33.18 .37	40.1 3.4	10.82 .19	60.7 3.2
18.5	47.28 +.12	38.5 +3.3	52.17 +.16	13.8 +1.0	33.45 +.16	43.6 +3.5	10.98 +.14	63.9 +3.2
28.5	47.37 +.06	41.8 3.2	52.31 .11	12.9 0.8	33.51 −.05	47.2 3.6	11.09 .08	67.2 3.2
Aug. 7.5	47.40 .00	45.0 3.1	52.40 .07	12.2 0.6	33.35 .25	50.8 3.6	11.15 +.03	70.3 3.1
17.5	47.37 −.05	48.1 2.9	52.45 +.02	11.7 0.4	33.00 .45	54.4 3.5	11.15 −.02	73.3 2.9
27.4	47.29 .10	50.9 2.7	52.45 −.02	11.3 0.2	32.44 .64	57.8 3.3	11.10 .07	76.1 2.6
Sept. 6.4	47.15 −.15	53.4 +2.4	52.41 −.06	11.2 +0.1	31.70 −.82	61.0 +3.1	11.00 −.12	78.6 +2.3
16.4	46.98 .19	55.6 2.0	52.34 .09	11.2 −0.1	30.80 .98	64.0 2.8	10.86 .16	80.8 2.0
26.4	46.77 .22	57.4 1.6	52.23 .11	11.3 0.2	29.75 1.11	66.6 2.4	10.69 .19	82.6 1.6
Oct. 6.3	46.53 .24	58.8 1.2	52.10 .13	11.6 0.3	28.57 1.22	68.8 2.0	10.48 .21	84.0 1.2
16.3	46.28 .26	59.7 0.7	51.96 .14	11.9 0.4	27.30 1.30	70.6 1.5	10.26 .23	85.0 0.8
26.3	46.01 −.26	60.2 +0.2	51.82 −.15	12.3 −0.4	25.97−1.35	71.8 +1.0	10.03 −.23	85.6 +0.3
Nov. 5.2	45.75 .25	60.1 −0.3	51.67 .14	12.7 0.5	24.60 1.37	72.6 +0.5	9.80 .23	85.6 −0.2
15.2	45.50 .24	59.6 0.8	51.55 .12	13.2 0.5	23.22 1.35	72.7 −0.1	9.57 .22	85.2 0.7
25.2	45.28 .21	58.5 1.3	51.43 .10	13.7 0.5	21.89 1.30	72.3 0.7	9.36 .20	84.4 1.1
Dec. 5.2	45.08 .18	57.0 1.7	51.35 .07	14.3 0.5	20.63 1.21	71.3 1.3	9.18 .17	83.0 1.5
15.1	44.91 −.14	55.0 −2.1	51.30 −.04	14.8 −0.5	19.48−1.08	69.7 −1.8	9.03 −.14	81.2 −1.9
25.1	44.79 .10	52.7 2.5	51.27 −.01	15.3 0.5	18.47 .92	67.6 2.3	8.91 .10	79.1 2.3
35.1	44.71 −.05	50.0 −2.8	51.28 +.03	15.8 −0.5	17.65− .74	65.0 −2.8	8.83 −.06	76.6 −2.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	61¹ Cygni.		ζ Cygni.		α Cephei.		1 Pegasi.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$21^h\ 2^m$	$+38^\circ\ 12'$	$21^h\ 8^m$	$+29^\circ\ 46'$	$21^h\ 15^m$	$+62^\circ\ 7'$	$21^h\ 17^m$	$+19^\circ\ 20'$
	s	″	s	″	s	″	s	″
Jan. 1.1	1.12 −.06	65.1 −2.4	18.29 −.06	59.9 −2.2	57.02 −.25	44.2 −2.6	3.55 −.04	28.8 −1.8
11.1	1.08 −.02	62.7 2.5	18.25 −.02	57.7 2.3	56.81 .18	41.5 2.9	3.53 −.01	27.0 1.8
21.1	1.08 +.02	60.1 2.6	18.25 +.02	55.4 2.4	56.67 .10	38.5 3.1	3.53 +.02	25.1 1.9
31.0	1.12 .06	57.5 2.6	18.29 .06	53.0 2.4	56.60 −.02	35.3 3.2	3.57 .05	23.3 1.8
Feb. 10.0	1.21 .11	54.9 2.5	18.36 .10	50.7 2.3	56.62 +.06	32.1 3.2	3.65 .09	21.5 1.7
20.0	1.34 +.15	52.5 −2.3	18.48 +.13	48.5 −2.1	56.72 +.14	28.9 −3.1	3.76 +.13	19.8 −1.5
29.9	1.51 .19	50.3 2.0	18.63 .17	46.6 1.8	56.90 .22	25.9 2.8	3.90 .16	18.4 1.2
Mar. 10.9	1.72 .23	48.5 1.6	18.82 .21	45.0 1.4	57.16 .29	23.2 2.4	4.08 .19	17.3 0.9
20.9	1.97 .27	47.1 1.1	19.05 .24	43.8 1.0	57.49 .36	21.0 2.0	4.29 .22	16.5 0.5
30.9	2.26 .30	46.2 0.6	19.30 .27	43.1 −0.5	57.88 .42	19.2 1.5	4.52 .25	16.2 −0.1
Apr. 9.8	2.58 +.33	45.8 −0.1	19.58 +.29	42.9 0.0	58.33 +.46	18.0 −0.9	4.79 +.28	16.3 +0.3
19.8	2.92 .35	46.0 +0.4	19.89 .31	43.1 +0.5	58.81 .50	17.5 −0.3	5.07 .30	16.8 0.7
29.8	3.27 .36	46.8 1.0	20.21 .32	43.9 1.0	59.33 .52	17.5 +0.3	5.38 .31	17.7 1.1
May 9.8	3.63 .36	48.0 1.5	20.54 .33	45.2 1.4	59.85 .52	18.2 0.9	5.69 .32	19.0 1.5
19.7	3.99 .35	49.8 2.0	20.87 .33	46.8 1.8	60.36 .51	19.5 1.5	6.01 .32	20.7 1.8
29.7	4.35 +.34	52.0 +2.4	21.20 +.32	48.9 +2.2	60.86 +.48	21.3 +2.0	6.33 +.31	22.7 +2.1
June 8.7	4.68 .32	54.5 2.7	21.51 .30	51.2 2.5	61.33 .44	23.6 2.5	6.63 .29	24.8 2.3
18.6	4.98 .29	57.4 2.9	21.80 .27	53.8 2.7	61.75 .39	26.3 2.9	6.92 .27	27.3 2.4
28.6	5.25 .25	60.4 3.1	22.05 .24	56.6 2.8	62.11 .33	29.4 3.2	7.18 .24	29.8 2.5
July 8.6	5.48 .21	63.6 3.2	22.28 .20	59.5 2.9	62.40 .26	32.7 3.4	7.40 .21	32.4 2.5
18.6	5.66 +.16	66.9 +3.2	22.45 +.16	62.4 +2.9	62.63 +.18	36.2 +3.6	7.59 +.17	34.9 +2.5
28.5	5.80 .11	70.1 3.2	22.59 .11	65.3 2.8	62.77 .10	39.8 3.6	7.74 .13	37.4 2.4
Aug. 7.5	5.88 +.05	73.3 3.1	22.67 .06	68.1 2.7	62.84 +.02	43.5 3.6	7.84 .08	39.7 2.3
17.5	5.90 .00	76.3 2.9	22.71 +.01	70.7 2.5	62.82 −.06	47.1 3.5	7.90 +.03	41.9 2.1
27.4	5.88 −.05	79.1 2.7	22.70 −.03	73.1 2.3	62.72 .13	50.5 3.3	7.91 −.01	43.9 1.9
Sept. 6.4	5.81 −.09	81.7 +2.4	22.64 −.07	75.3 +2.0	62.55 −.20	53.7 +3.1	7.88 −.05	45.6 +1.6
16.4	5.70 .13	83.9 2.1	22.55 .11	77.1 1.7	62.31 .26	56.7 2.8	7.81 .08	47.0 1.3
26.4	5.55 .16	85.8 1.7	22.42 .14	78.7 1.4	62.02 .32	59.3 2.4	7.71 .11	48.2 1.0
Oct. 6.3	5.37 .19	87.4 1.3	22.27 .16	79.9 1.0	61.67 .37	61.6 2.0	7.58 .13	49.1 0.7
16.3	5.17 .20	88.5 0.9	22.09 .18	80.7 0.6	61.28 .40	63.3 1.5	7.44 .15	49.6 0.4
26.3	4.97 −.21	89.1 +0.4	21.91 −.18	81.2 +0.2	60.87 −.42	64.6 +1.0	7.28 −.16	49.9 +0.1
Nov. 5.3	4.76 .20	89.4 0.0	21.73 .18	81.2 −0.2	60.44 .43	65.4 +0.5	7.12 .15	49.8 −0.2
15.2	4.56 .19	89.1 −0.5	21.55 .17	80.8 0.6	60.02 .42	65.6 −0.1	6.97 .14	49.4 0.5
25.2	4 37 .17	88.4 0.9	21.38 .15	80.1 1.0	59.60 .40	65.2 0.7	6.83 .13	48.7 0.8
Dec. 5.2	4.21 .15	87.3 1.3	21.24 .13	78.9 1.3	59.21 .37	64.2 1.2	6.71 .11	47.7 1.1
15.2	4.07 −.12	85.7 −1.7	21.12 −.10	77.4 −1.6	58.85 −.33	62.7 −1.7	6.62 −.09	46.4 −1.4
25.1	3.97 .09	83.7 2.1	21.03 .07	75.6 1.9	58.54 .28	60.7 2.2	6.54 .06	45.0 1.6
35.1	3.90 −.05	81.5 −2.4	20.97 −.04	73.5 −2.2	58.29 −.22	58.3 −2.7	6.50 −.03	43.3 −1.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Aquarii.		β Cephei.		ξ Aquarii.		ε Pegasi.	
	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.
	$21^{h}\ 25^{m}$	$-6^{\circ}\ 2'$	$21^{h}\ 27^{m}$	$+70^{\circ}\ 4'$	$21^{h}\ 31^{m}$	$-8^{\circ}\ 20'$	$21^{h}\ 38^{m}$	$+9^{\circ}\ 22'$
	s	″	s	″	s	″	s	″
Jan. 1.1	50.60 −.02	56.2 −0.6	11.99 −.41	76.7 −2.4	58.39 −.03	28.8 −0.5	51.12 −.04	41.7 −1.3
11.1	50.59 +.01	56.8 0.6	11.63 .32	74.1 2.8	58.37 .00	29.3 0.5	51.09 −.02	40.4 1.3
21.1	50.61 .04	57.4 0.5	11.36 .22	71.1 3.0	58.39 +.03	29.7 0.4	51.09 +.01	39.1 1.3
31.0	50.67 .07	57.8 0.4	11.20 −.11	68.0 3.2	58.44 .06	30.0 0.3	51.12 .04	37.8 1.2
Feb. 10.0	50.75 .10	58.1 0.3	11.15 +.01	64.7 3.3	58.52 .09	30.2 −0.1	51.18 .08	36.6 1.1
20.0	50.86 +.13	58.3 −0.1	11.22 +.13	61.4 −3.2	58.63 +.12	30.2 +0.1	51.28 +.11	35.5 −0.9
29.9	51.01 .16	58.3 +0.1	11.40 .24	58.3 3.0	58.77 .15	30.0 0.3	51.40 .14	34.7 0.7
Mar. 10.9	51.18 .19	58.0 0.4	11.70 .35	55.4 2.7	58.94 .18	29.6 0.5	51.55 .17	34.1 0.4
20.9	51.39 .22	57.5 0.6	12.10 .44	52.9 2.3	59.14 .21	29.0 0.7	51.74 .20	33.8 −0.1
30.9	51.62 .25	56.8 0.9	12.59 .52	50.9 1.7	59.37 .24	28.1 0.9	51.96 .23	33.9 +0.2
Apr. 9.8	51.87 +.27	55.8 +1.1	13.15 +.59	49.5 −1.1	59.62 +.26	27.1 +1.1	52.20 +.26	34.2 +0.5
19.8	52.15 .29	54.6 1.3	13.78 .64	48.6 −0.5	59.90 .28	25.8 1.3	52.48 .28	35.0 0.9
29.8	52.45 .30	53.2 1.5	14.44 .67	48.4 +0.1	60.20 .30	24.3 1.5	52.77 .30	36.1 1.2
May 9.8	52.76 .31	51.7 1.6	15.12 .67	48.8 0.7	60.51 .31	22.7 1.6	53.07 .31	37.5 1.5
19.7	53.08 .32	50.0 1.7	15.79 .65	49.8 1.3	60.83 .32	21.0 1.7	53.39 .31	39.2 1.8
29.7	53.40 +.31	48.2 +1.8	16.44 +.63	51.4 +1.8	61.15 +.32	19.3 +1.7	53.70 +.31	41.1 +2.0
June 8.7	53.71 .30	46.5 1.7	17.05 .58	53.5 2.3	61.46 .31	17.6 1.7	54.01 .30	43.1 2.1
18.7	54.00 .28	44.7 1.7	17.60 .51	56.0 2.7	61.76 .29	15.9 1.6	54.30 .28	45.3 2.1
28.6	54.28 .26	43.1 1.6	18.07 .43	58.9 3.1	62.04 .27	14.3 1.5	54.58 .26	47.5 2.2
July 8.6	54.52 .23	41.5 1.5	18.46 .34	62.2 3.4	62.29 .23	12.9 1.4	54.82 .23	49.7 2.2
18.6	54.73 +.19	40.2 +1.3	18.75 +.24	65.7 +3.6	62.51 +.20	11.6 +1.2	55.03 +.19	51.8 +2.1
28.5	54.90 .15	39.0 1.1	18.94 .13	69.3 3.7	62.69 .16	10.5 1.0	55.20 .15	53.9 2.0
Aug. 7.5	55.02 .10	38.0 0.9	19.02 +.02	73.0 3.7	62.82 .11	9.6 0.8	55.33 .11	55.8 1.8
17.5	55.11 .06	37.2 0.7	18.99 −.08	76.7 3.6	62.91 .06	8.9 0.6	55.42 .06	57.5 1.6
27.5	55.14 +.02	36.6 0.5	18.85 .18	80.3 3.5	62.95 +.02	8.5 0.4	55.46 +.02	58.9 1.4
Sept. 6.4	55.14 −.02	36.2 +0.3	18.62 −.28	83.8 +3.3	62.96 −.02	8.2 +0.2	55.46 −.02	60.2 +1.2
16.4	55.10 .06	36.0 +0.1	18.29 .37	87.0 3.0	62.92 .05	8.1 0.0	55.42 .06	61.2 0.9
26.4	55.02 .09	36.0 −0.1	17.89 .44	89.9 2.7	62.85 .08	8.2 −0.2	55.35 .09	62.0 0.6
Oct. 6.4	54.91 .11	36.1 0.2	17.40 .51	92.4 2.3	62.75 .11	8.4 0.3	55.25 .11	62.6 0.4
16.3	54.79 .13	36.4 0.3	16.87 .56	94.4 1.8	62.63 .12	8.8 0.4	55.12 .13	62.9 +0.2
26.3	54.66 −.13	36.8 −0.4	16.29 −.59	96.1 +1.3	62.50 −.13	9.2 −0.5	54.99 −.13	63.0 −0.1
Nov. 5.3	54.53 .13	37.2 0.5	15.68 .61	97.1 0.8	62.36 .13	9.7 0.5	54.86 .13	62.8 0.3
15.2	54.40 .12	37.7 0.5	15.06 .62	97.6 +0.3	62.23 .13	10.2 0.5	54.72 .13	62.4 0.5
25.2	54.28 .11	38.3 0.6	14.44 .60	97.6 −0.6	62.12 .11	10.8 0.5	54.60 .12	61.8 0.7
Dec. 5.2	54.18 .09	38.9 0.6	13.85 .57	96.9 0.9	62.02 .09	11.4 0.5	54.49 .10	61.0 0.9
15.2	54.10 −.07	39.5 −0.6	13.31 −.52	95.6 −1.5	61.94 −.07	11.9 −0.5	54.39 −.08	60.0 −1.1
25.1	54.05 .04	40.2 0.6	12.82 .45	93.8 2.0	61.88 .04	12.5 0.5	54.32 .06	58.9 1.2
35.1	54.03 −.01	40.8 −0.6	12.40 −.38	91.5 −2.5	61.86 −.01	13.0 −0.5	54.28 −.03	57.7 −1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	11 Cephei.		μ Capricorni.		79 Draconis.		α Aquarii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 21 40	° ′ +70 48	h m 21 47	° ′ −14 3	h m 21 51	° ′ +73 11	h m 22 0	° ′ − 0 50
	s	″	s	″	s	″	s	″
Jan. 1.1	16.50 −.46	57.1 −2.2	22.74 −.04	48.2 −0.2	26.82 −.56	36.0 −2.1	12.54 −.05	48.6 −0.8
11.1	16.10 .36	54.7 2.6	22.72 −.01	48.4 −0.1	26.32 .46	33.8 2.5	12.50 −.03	49.4 0.8
21.1	15.78 .26	51.9 2.9	22.72 +.02	48.4 0.0	25.92 .34	31.1 2.9	12.49 .00	50.1 0.7
31.1	15.58 .15	48.8 3.2	22.76 .05	48.4 +0.1	25.63 .22	28.0 3.1	12.51 +.03	50.8 0.6
Feb. 10.0	15.49 −.03	45.5 3.3	22.83 .08	48.1 0.3	25.48 −.08	24.8 3.2	12.55 .06	51.4 0.5
20.0	15.52 +.09	42.3 −3.2	22.92 +.11	47.7 +0.5	25.47 +.06	21.6 −3.2	12.63 +.09	51.8 −0.3
Mar. 1.0	15.67 .21	39.1 3.0	23.05 .14	47.2 0.7	25.59 .19	18.4 3.1	12.74 .12	52.0 −0.1
10.9	15.94 .32	36.2 2.7	23.21 .17	46.4 0.9	25.86 .32	15.4 2.8	12.87 .15	52.0 +0.1
20.9	16.32 .43	33.6 2.3	23.40 .20	45.5 1.1	26.25 .45	12.7 2.4	13.04 .18	51.7 0.4
30.9	16.80 .52	31.5 1.8	23.62 .23	44.3 1.3	26.76 .56	10.4 2.0	13.25 .22	51.1 0.7
Apr. 9.9	17.37 +.60	29.9 −1.3	23.87 +.26	43.0 +1.4	27.37 +.65	8.7 −1.5	13.48 +.25	50.3 +1.0
19.8	18.00 .65	28.9 0.7	24.15 .28	41.5 1.5	28.06 .72	7.5 0.9	13.74 .27	49.2 1.2
29.8	18.67 .68	28.5 −0.1	24.45 .30	39.9 1.6	28.80 .76	6.9 −0.3	14.02 .29	47.9 1.4
May 9.8	19.37 .70	28.7 +0.5	24.76 .32	38.2 1.7	29.58 .78	6.9 +0.3	14.32 .30	46.3 1.6
19.8	20.08 .69	29.5 1.1	25.08 .33	36.4 1.7	30.37 .78	7.6 0.9	14.63 .31	44.6 1.8
29.7	20.76 +.66	31.0 +1.7	25.41 +.33	34.7 +1.7	31.14 +.75	8.8 +1.5	14.95 +.32	42.7 +1.9
June 8.7	21.40 .62	32.9 2.2	25.74 .32	33.0 1.6	31.88 .70	10.6 2.0	15.27 .31	40.8 1.9
18.7	21.99 .55	35.3 2.6	26.05 .30	31.4 1.5	32.55 .63	12.9 2.5	15.57 .30	38.8 1.9
28.6	22.51 .47	38.2 3.0	26.35 .28	30.0 1.4	33.15 .55	15.6 2.9	15.86 .28	36.9 1.9
July 8.6	22.94 .38	41.3 3.3	26.61 .25	28.7 1.2	33.65 .45	18.7 3.2	16.12 .25	35.0 1.8
18.6	23.27 +.28	44.8 +3.5	26.85 +.22	27.7 +0.9	34.04 +.34	22.1 +3.5	16.35 +.21	33.3 +1.6
28.6	23.50 .17	48.4 3.7	27.05 .18	26.9 0.7	34.32 .22	25.6 3.6	16.55 .17	31.7 1.5
Aug. 7.5	23.62 +.06	52.1 3.7	27.20 .13	26.3 0.5	34.48 +.10	29.3 3.7	16.70 .13	30.4 1.3
17.5	23.63 −.05	55.8 3.7	27.31 .08	25.9 +0.3	34.52 −.02	33.1 3.7	16.81 .09	29.2 1.1
27.5	23.53 .15	59.5 3.6	27.37 +.04	25.7 0.0	34.44 .14	36.8 3.6	16.88 .05	28.2 0.8
Sept. 6.5	23.32 −.25	63.0 +3.4	27.39 .00	25.8 −0.2	34.23 −.26	40.4 +3.5	16.91 +.01	27.5 +0.6
16.4	23.02 .36	66.3 3.2	27.36 −.04	26.0 0.3	33.92 .37	43.8 3.3	16.89 −.03	27.0 0.4
26.4	22.63 .43	69.4 2.9	27.30 .07	26.4 0.4	33.50 .47	47.0 3.0	16.84 .06	26.7 +0.2
Oct. 6.4	22.17 .50	72.0 2.5	27.21 .10	26.9 0.5	33.00 .55	49.8 2.6	16.77 .09	26.6 0.0
16.3	21.64 .56	74.3 2.0	27.10 .12	27.5 0.6	32.41 .62	52.3 2.2	16.66 .11	26.6 −0.1
26.3	21.05 −.60	76.1 +1.5	26.98 −.13	28.0 −0.6	31.76 −.68	54.3 +1.7	16.55 −.12	26.8 −0.3
Nov. 5.3	20.44 .62	77.4 1.0	26.85 .13	28.7 0.6	31.06 .71	55.8 1.2	16.42 .12	27.2 0.4
15.3	19.80 .63	78.1 +0.4	26.72 .12	29.2 0.6	30.34 .73	56.7 +0.6	16.30 .12	27.7 0.5
25.2	19.17 .63	78.2 −0.2	26.60 .11	29.8 0.5	29.61 .72	57.1 0.0	16.18 .11	28.2 0.6
Dec. 5.2	18.55 .60	77.8 0.8	26.49 .10	30.3 0.5	28.90 .70	56.8 −0.6	16.07 .10	28.9 0.7
15.2	17.97 −.55	76.7 −1.3	26.40 −.08	30.7 −0.4	28.21 −.66	55.9 −1.2	15.98 −.08	29.6 −0.7
25.1	17.44 .49	75.1 1.9	26.34 .05	31.0 0.3	27.58 .60	54.5 1.7	15.91 .06	30.4 0.8
35.1	16.99 −.42	73.0 −2.4	26.30 −.02	31.3 −0.2	27.02 −.52	52.5 −2.2	15.86 −.04	31.1 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Gruis.		θ Aquarii.		π Aquarii.		η Aquarii.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 22 1	° ′ −47 28	h m 22 11	° ′ − 8 19	h m 22 19	° ′ + 0 49	h m 22 29	° ′ − 0 40
	s	″	s	″	s	″	s	″
Jan. 1.1	23.54 −.09	80.8 +1.3	6.47 −.05	26.1 −0.5	44.12 −.06	38.0 −0.8	46.86 −.07	35.0 −0.8
11.1	23.46 .05	79.4 1.6	6.43 −.03	26.6 0.4	44.07 .04	37.1 0.8	46.81 .05	35.8 0.7
21.1	23.43 −.01	77.6 1.9	6.41 .00	26.9 0.3	44.04 −.02	36.4 0.8	46.77 −.02	36.5 0.7
31.1	23.45 +.03	75.6 2.1	6.42 +.02	27.2 −0.2	44.04 +.01	35.6 0.7	46.76 .00	37.1 0.6
Feb. 10.0	23.51 .08	73.4 2.3	6.46 .05	27.3 0.0	44.06 .04	35.0 0.6	46.78 +.03	37.6 0.5
20.0	23.62 +.13	71.0 +2.4	6.53 +.08	27.2 +0.2	44.12 +.07	34.6 −0.4	46.83 +.06	38.0 −0.3
Mar. 1.0	23.76 .17	68.5 2.5	6.63 .11	26.9 0.4	44.21 .10	34.3 −0.2	46.90 .09	38.2 −0.1
11.0	23.96 .22	66.0 2.6	6.76 .15	26.4 0.6	44.32 .13	34.2 +0.1	47.01 .12	38.1 +0.1
20.9	24.20 .26	63.4 2.6	6.93 .18	25.7 0.8	44.48 .17	34.5 0.3	47.15 .16	37.8 0.4
30.9	24.48 .30	60.8 2.5	7.12 .21	24.8 1.0	44.66 .20	34.9 0.6	47.33 .19	37.2 0.7
Apr. 9.9	24.81 +.34	58.3 +2.4	7.35 +.24	23.6 +1.3	44.88 +.23	35.7 +0.9	47.54 +.22	36.4 +1.0
19.8	25.17 .37	56.0 2.3	7.61 .27	22.2 1.5	45.12 .26	36.8 1.2	47.78 .25	35.3 1.2
29.8	25.55 .40	53.8 2.1	7.89 .29	20.7 1.6	45.40 .28	38.1 1.4	48.05 .28	33.9 1.5
May 9.8	25.97 .42	51.9 1.8	8.19 .31	18.9 1.7	45.69 .30	39.6 1.6	48.34 .30	32.3 1.7
19.8	26.40 .43	50.2 1.5	8.50 .32	17.1 1.8	46.00 .31	41.3 1.8	48.64 .31	30.6 1.8
29.7	26.84 +.44	48.8 +1.2	8.83 +.32	15.3 +1.9	46.32 +.32	43.2 +1.9	48.96 +.32	28.7 +1.9
June 8.7	27.28 .43	47.8 0.8	9.15 .32	13.4 1.8	46.63 .31	45.2 2.0	49.28 .32	26.7 2.0
18.7	27.70 .41	47.1 0.4	9.46 .31	11.6 1.8	46.95 .30	47.2 2.0	49.60 .31	24.7 2.0
28.7	28.11 .39	46.9 +0.1	9.76 .29	9.9 1.7	47.24 .28	49.2 2.0	49.90 .29	22.7 2.0
July 8.6	28.48 .35	47.0 −0.3	10.04 .26	8.3 1.5	47.52 .26	51.2 1.9	50.18 .27	20.8 1.9
18.6	28.81 +.30	47.5 −0.7	10.28 +.23	6.8 +1.3	47.76 +.23	53.0 +1.8	50.43 +.24	19.0 +1.7
28.6	29.09 .25	48.4 1.0	10.49 .19	5.6 1.1	47.97 .19	54.7 1.6	50.65 .20	17.3 1.5
Aug. 7.5	29.31 .19	49.6 1.3	10.66 .15	4.6 0.9	48.14 .15	56.2 1.4	50.83 .16	15.9 1.3
17.5	29.47 .13	51.1 1.6	10.79 .10	3.9 0.6	48.27 .11	57.5 1.2	50.97 .12	14.6 1.1
27.5	29.56 +.06	52.8 1.8	10.87 .06	3.3 0.4	48.36 .06	58.6 1.0	51.07 .07	13.6 0.9
Sept. 6.5	29.60 .00	54.6 −1.9	10.91 +.02	3.0 +0.2	48.40 +.02	59.5 +0.8	51.12 +.03	12.8 +0.6
16.4	29.57 −.06	56.5 1.9	10.91 −.02	2.9 0.0	48.40 −.02	60.1 0.5	51.13 .00	12.3 0.4
26.4	29.48 .11	58.4 1.8	10.87 .05	3.0 −0.2	48.37 .05	60.5 0.3	51.11 −.04	11.9 +0.2
Oct. 6.4	29.35 .15	60.2 1.7	10.80 .08	3.3 0.3	48.31 .07	60.7 +0.1	51.06 .07	11.8 0.0
16.4	29.18 .18	61.8 1.5	10.71 .10	3.6 0.4	48.22 .09	60.8 −0.1	50.98 .09	11.8 −0.1
26.3	28.98 −.20	63.2 −1.2	10.60 −.11	4.1 −0.5	48.12 −.11	60.6 −0.2	50.88 −.10	12.0 −0.3
Nov. 5.3	28.77 .21	64.3 0.9	10.47 .12	4.7 0.5	48.00 .12	60.3 0.4	50.77 .11	12.4 0.4
15.3	28.55 .21	65.0 0.5	10.35 .12	5.2 0.6	47.88 .12	59.9 0.5	50.65 .11	12.8 0.5
25.2	28.35 .20	65.3 −0.1	10.23 .11	5.8 0.6	47.76 .11	59.3 0.6	50.54 .11	13.4 0.6
Dec. 5.2	28.15 .18	65.2 +0.3	10.13 .10	6.4 0.6	47.65 .10	58.7 0.7	50.43 .10	14.0 0.7
15.2	27.99 −.15	64.8 +0.7	10.03 −.08	7.0 −0.6	47.56 −.09	58.0 −0.7	50.33 −.09	14.7 −0.7
25.2	27.85 .12	63.9 1.1	9.96 .06	7.5 0.5	47.48 .07	57.2 0.8	50.25 .08	15.4 0.7
35.1	27.76 −.08	62.6 +1.4	9.90 −.04	8.0 −0.4	47.41 −.05	56.4 −0.8	50.18 −.06	16.1 −0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	226 Cephei (B.)		ζ Pegasi.		ι Cephei.		λ Aquarii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	$22^{h}\ 30^{m}$	$+75^{\circ}\ 39'$	$22^{h}\ 36^{m}$	$+10^{\circ}\ 15'$	$22^{h}\ 45^{m}$	$+65^{\circ}\ 37'$	$22^{h}\ 46^{m}$	$-\ 8^{\circ}\ 9'$
	s	″	s	″	s	″	s	″
Jan. 1.2	18.26 −.74	81.0 −1.5	3.00 −.08	58.6 −1.1	47.22 −.41	65.5 −1.4	57.41 −.07	25.5 −0.5
11.1	17.57 .64	79.2 2.0	2.93 .06	57.5 1.1	46.84 .36	63.8 1.9	57.34 .05	26.0 0.4
21.1	16.98 .53	76.9 2.4	2.88 .04	56.3 1.1	46.51 .30	61.6 2.4	57.30 .03	26.3 0.3
31.1	16.51 .40	74.2 2.8	2.86 −.01	55.2 1.1	46.24 .23	59.0 2.7	57.28 −.01	26.5 −0.1
Feb. 10.1	16.18 .25	71.2 3.1	2.86 +.02	54.1 1.0	46.05 .15	56.2 2.9	57.28 +.02	26.6 0.0
20.0	16.00 −.09	68.1 −3.2	2.90 +.05	53.1 −0.9	45.95 −.06	53.2 −3.0	57.31 +.05	26.4 +0.2
Mar. 1.0	15.99 +.07	64.9 3.2	2.96 .08	52.3 0.7	45.94 +.04	50.1 3.0	57.38 .08	26.1 0.4
11.0	16.14 .24	61.8 3.0	3.06 .12	51.7 0.5	46.03 .14	47.2 2.9	57.47 .11	25.6 0.6
20.9	16.46 .39	58.9 2.7	3.20 .15	51.4 −0.2	46.21 .23	44.4 2.7	57.60 .15	24.8 0.9
30.9	16.93 .53	56.3 2.3	3.37 .19	51.3 +0.1	46.48 .32	41.9 2.3	57.76 .18	23.8 1.1
Apr. 9.9	17.52 +.66	54.2 −1.9	3.57 +.22	51.6 +0.5	46.85 +.40	39.9 −1.8	57.96 +.21	22.5 +1.3
19.9	18.24 .76	52.5 1.4	3.81 .25	52.3 0.8	47.28 .47	38.3 1.3	58.19 .24	21.1 1.5
29.8	19.05 .84	51.4 0.8	4.07 .28	53.3 1.1	47.78 .52	37.3 0.7	58.45 .27	19.5 1.7
May 9.8	19.92 .89	50.9 −0.2	4.36 .30	54.6 1.4	48.33 .56	36.9 −0.1	58.73 .29	17.7 1.8
19.8	20.82 .91	51.0 +0.4	4.67 .31	56.1 1.7	48.91 .58	37.0 +0.5	59.04 .31	15.8 1.9
29.8	21.73 +.90	51.7 +1.0	4.99 +.32	58.0 +1.9	49.50 +.59	37.8 +1.0	59.36 +.32	13.8 +2.0
June 8.7	22.62 .87	53.0 1.5	5.31 .32	60.0 2.1	50.09 .58	39.0 1.6	59.68 .32	11.8 2.0
18.7	23.47 .81	54.8 2.0	5.63 .31	62.1 2.2	50.66 .55	40.9 2.1	60.00 .31	9.9 1.9
28.7	24.24 .73	57.1 2.5	5.93 .29	64.3 2.3	51.19 .51	43.2 2.5	60.31 .30	8.0 1.8
July 8.6	24.93 .63	59.9 2.9	6.21 .27	66.6 2.2	51.68 .45	45.9 2.9	60.61 .28	6.3 1.6
18.6	25.50 +.52	63.0 +3.2	6.46 +.24	68.8 +2.2	52.10 +.39	49.0 +3.2	60.88 +.25	4.8 +1.4
28.6	25.96 .39	66.4 3.5	6.68 .20	70.9 2.1	52.46 .32	52.3 3.4	61.11 .22	3.4 1.2
Aug. 7.6	26.29 .26	70.0 3.7	6.87 .16	72.9 1.9	52.73 .23	55.9 3.6	61.31 .18	2.3 1.0
17.5	26.48 +.12	73.7 3.8	7.01 .12	74.8 1.7	52.92 .15	59.5 3.7	61.47 .14	1.5 0.7
27.5	26.54 −.01	77.5 3.8	7.10 .08	76.4 1.5	53.03 +.07	63.2 3.7	61.59 .10	.9 0.5
Sept. 6.5	26.46 −.15	81.3 +3.7	7.16 +.04	77.9 +1.3	53.05 −.02	66.9 +3.6	61.66 +.05	.5 +0.3
16.5	26.24 .28	85.0 3.6	7.18 .00	79.1 1.1	53.00 .10	70.5 3.5	61.70 +.01	.4 0.0
26.4	25.90 .40	88.5 3.4	7.16 −.04	80.0 0.9	52.86 .17	73.9 3.3	61.69 −.02	.4 −0.2
Oct. 6.4	25.44 .51	91.7 3.1	7.10 .07	80.8 0.6	52.65 .24	77.0 3.0	61.65 .05	.7 0.3
16.4	24.88 .61	94.6 2.7	7.03 .09	81.2 0.4	52.37 .30	79.9 2.6	61.58 .06	1.1 0.4
26.3	24.22 −.69	97.2 +2.3	6.93 −.10	81.5 +0.1	52.04 −.35	82.3 +2.2	61.50 −.10	1.6 −0.5
Nov. 5.3	23.48 .76	99.2 1.8	6.82 .11	81.6 −0.1	51.66 .40	84.3 1.7	61.39 .11	2.2 0.6
15.3	22.69 .81	100.8 1.3	6.70 .12	81.4 0.3	51.25 .43	85.8 1.2	61.28 .11	2.8 0.6
25.3	21.87 .83	101.8 0.7	6.58 .12	81.0 0.5	50.81 .44	86.8 0.7	61.17 .11	3.5 0.6
Dec. 5.2	21.02 .84	102.1 +0.1	6.46 .11	80.4 0.7	50.36 .45	87.1 +0.1	61.06 .11	4.1 0.6
15.2	20.19 −.82	101.9 −0.5	6.36 −.10	79.6 −0.9	49.91 −.44	86.9 −0.5	60.96 −.10	4.7 −0.6
25.2	19.39 .77	101.1 1.1	6.26 .09	78.7 1.0	49.48 .42	86.1 1.1	60.87 .08	5.2 0.5
35.2	18.65 −.71	99.6 −1.7	6.19 −.07	77.7 −1.1	49.08 −.39	84.7 −1.6	60.80 −.06	5.7 −0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Piscis Australis. (*Fomalhaut.*)		α Pegasi. (*Markab.*)		ο Cephei.		θ Piscium.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 22 51	° ′ −30 11	h m 22 59	° ′ +14 37	h m 23 14	° ′ +67 30	h m 23 22	° ′ + 5 46
	s	″	s	″	s	″	s	″
Jan. 1.2	39.53 −.09	57.2 +0.2	21.40 −.10	23.8 −1.1	8.83 −.47	85.4 −1.0	28.08 −.10	62.7 −0.8
11.2	39.45 .07	56.8 0.6	21.32 .08	22.7 1.2	8.38 .42	84.1 1.6	27.99 .08	61.9 0.8
21.1	39.39 .04	56.1 0.9	21.25 .06	21.5 1.2	7.98 .37	82.2 2.1	27.92 .06	61.1 0.8
31.1	39.36 −.01	55.1 1.1	21.20 .03	20.3 1.3	7.64 .30	79.9 2.5	27.86 .04	60.3 0.8
Feb. 10.1	39.36 +.02	53.9 1.3	21.18 −.01	19.0 1.2	7.37 .22	77.3 2.8	27.83 −.02	59.5 0.7
20.1	39.39 +.05	52.5 +1.6	21.19 +.02	17.8 −1.1	7.19 −.13	74.4 −2.9	27.82 +.01	58.9 −0.6
Mar. 1.0	39.45 .08	50.8 1.8	21.23 .06	16.8 0.9	7.11 −.03	71.4 3.0	27.84 .04	58.4 0.4
11.0	39.56 .12	48.9 1.9	21.30 .09	16.0 0.7	7.13 +.07	68.4 2.9	27.89 .07	58.1 −0.2
21.0	39.69 .16	46.9 2.1	21.41 .13	15.4 0.4	7.26 .18	65.6 2.7	27.98 .10	58.1 +0.1
30.9	39.87 .20	44.8 2.2	21.56 .17	15.1 −0.1	7.49 .28	62.9 2.4	28.10 .14	58.3 0.4
Apr. 9.9	40.08 +.23	42.5 +2.3	21.75 +.20	15.2 +0.2	7.82 +.37	60.7 −2.0	28.27 +.18	58.8 +0.7
19.9	40.33 .27	40.2 2.3	21.97 .24	15.6 0.6	8.24 .46	58.8 1.6	28.47 .22	59.6 0.9
29.9	40.62 .30	37.9 2.3	22.23 .27	16.4 0.9	8.73 .53	57.5 1.1	28.70 .25	60.7 1.2
May 9.8	40.93 .33	35.7 2.2	22.51 .29	17.4 1.3	9.29 .58	56.7 −0.5	28.97 .28	62.1 1.5
19.8	41.27 .35	33.5 2.1	22.81 .31	18.9 1.6	9.90 .62	56.4 0.0	29.26 .30	63.7 1.7
29.8	41.62 +.36	31.5 +1.9	23.13 +.32	20.6 +1.8	10.53 +.63	56.8 +0.6	29.57 +.31	65.5 +1.9
June 8.8	41.98 .36	29.7 1.7	23.46 .32	22.5 2.0	11.17 .63	57.7 1.2	29.88 .32	67.5 2.0
18.7	42.34 .35	28.1 1.4	23.78 .32	24.6 2.2	11.80 .62	59.2 1.7	30.21 .32	69.6 2.1
28.7	42.70 .34	26.8 1.1	24.09 .31	26.9 2.3	12.40 .58	61.2 2.2	30.52 .31	71.7 2.1
July 8.7	43.03 .32	25.8 0.8	24.39 .28	29.2 2.3	12.96 .53	63.6 2.6	30.83 .29	73.9 2.1
18.6	43.34 +.29	25.1 +0.5	24.66 +.25	31.6 +2.3	13.46 +.47	66.4 +3.0	31.11 +.27	75.9 +2.0
28.6	43.61 .25	24.8 +0.1	24.90 .22	33.9 2.2	13.90 .40	69.6 3.3	31.36 .24	77.9 1.9
Aug. 7.6	43.84 .21	24.9 −0.2	25.10 .18	36.1 2.1	14.26 .32	73.0 3.5	31.58 .20	79.7 1.8
17.6	44.02 .16	25.2 0.5	25.26 .14	38.2 2.0	14.53 .23	76.6 3.6	31.77 .16	81.4 1.6
27.5	44.16 .11	25.9 0.8	25.38 .10	40.1 1.8	14.72 .15	80.3 3.7	31.91 .12	82.9 1.3
Sept. 6.5	44.25 +.06	26.8 −1.0	25.46 +.06	41.8 +1.6	14.82 +.06	84.0 +3.7	32.02 +.08	84.1 +1.1
16.5	44.29 +.02	28.0 1.2	25.50 +.02	43.3 1.4	14.83 −.03	87.7 3.6	32.08 .04	85.1 0.9
26.4	44.28 −.02	29.3 1.3	25.50 −.02	44.5 1.1	14.76 .11	91.2 3.5	32.11 +.01	85.9 0.6
Oct. 6.4	44.24 .06	30.6 1.4	25.47 .05	45.5 0.9	14.61 .19	94.6 3.2	32.10 −.02	86.4 0.4
16.4	44.16 .09	32.0 1.4	25.41 .07	46.3 0.6	14.38 .26	97.7 2.9	32.06 .05	86.7 +0.2
26.4	44.05 −.12	33.4 −1.3	25.32 −.09	46.8 +0.4	14.08 −.33	100.5 +2.6	32.00 −.07	86.8 0.0
Nov. 5.3	43.93 .13	34.6 1.1	25.22 .11	47.0 +0.1	13.72 .38	102.9 2.1	31.92 .09	86.7 −0.1
15.3	43.79 .14	35.6 0.9	25.11 .11	47.0 −0.1	13.32 .43	104.8 1.6	31.83 .10	86.5 0.3
25.3	43.65 .14	36.5 0.7	24.99 .12	46.8 0.3	12.87 .46	106.1 1.1	31.73 .10	86.1 0.5
Dec. 5.3	43.51 .13	37.0 0.4	24.88 .12	46.4 0.6	12.40 .48	107.0 +0.5	31.62 .10	85.6 0.6
15.2	43.38 −.12	37.4 −0.2	24.76 −.11	45.7 −0.8	11.92 −.48	107.2 −0.1	31.52 −.10	85.0 −0.7
25.2	43.27 .10	37.4 +0.1	24.66 .10	44.8 0.9	11.44 .47	106.8 0.7	31.42 .10	84.3 0.8
35.2	43.16 −.08	37.1 +0.4	24.57 −.09	43.8 −1.1	10.98 −.45	105.9 −1.2	31.32 −.09	83.5 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ι Piscium.		γ Cephei.		Groombridge 4163.		ω Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 23 34	° ′ + 5 2	h m 23 34	° ′ +77 1	h m 23 49	° ′ +73 48	h m 23 53	° ′ + 6 15
	s	″	s	″	s	″	s	″
Jan. 1.2	22.51 −.10	21.8 −0.8	51.03 −.90	59.1 −0.6	31.98 −.70	46.6 −0.5	44.81 −.11	50.6 −0.8
11.2	22.42 .09	21.0 0.8	50.16 .84	58.2 1.2	31.30 .66	45.9 1.0	44.71 .10	49.8 0.8
21.2	22.34 .07	20.2 0.8	49.35 .76	56.7 1.7	30.66 .61	44.5 1.6	44.62 .09	49.0 0.8
31.1	22.27 .05	19.4 0.7	48.64 .65	54.7 2.2	30.08 .53	42.7 2.1	44.55 .07	48.3 0.7
Feb. 10.1	22.23 −.03	18.8 0.6	48.05 .52	52.3 2.6	29.59 .45	40.4 2.5	44.49 .05	47.6 0.6
20.1	22.21 .00	18.2 −0.5	47.61 −.36	49.5 −2.9	29.21 −.32	37.7 −2.8	44.45 −.03	47.0 −0.5
Mar. 1.1	22.22 +.03	17.7 0.3	47.33 .20	46.5 3.0	28.95 .18	34.8 3.0	44.44 .00	46.5 0.4
11.0	22.26 .06	17.5 −0.1	47.23 −.01	43.4 3.1	28.84 −.04	31.8 3.0	44.46 +.04	46.3 −0.2
21.0	22.34 .09	17.5 +0.1	47.31 +.17	40.4 3.0	28.87 +.11	28.8 2.9	44.52 .08	46.2 0.0
31.0	22.45 .13	17.8 0.4	47.57 .35	37.5 2.8	29.05 .25	25.9 2.7	44.61 .12	46.4 +0.3
Apr. 9.9	22.61 +.17	18.3 +0.7	48.01 +.52	34.9 −2.4	29.38 +.39	23.3 −2.4	44.75 +.15	46.9 +0.6
19.9	22.80 .21	19.1 1.0	48.61 .67	32.6 2.0	29.83 .51	21.0 2.0	44.92 .19	47.6 0.9
29.9	23.03 .24	20.3 1.3	49.35 .79	30.9 1.5	30.41 .62	19.2 1.6	45.13 .23	48.6 1.2
May 9.9	23.28 .27	21.6 1.5	50.19 .89	29.6 1.0	31.08 .71	17.8 1.1	45.38 .26	49.9 1.5
19.8	23.57 .29	23.2 1.7	51.13 .96	28.9 −0.4	31.84 .78	17.0 −0.5	45.66 .29	51.5 1.7
29.8	23.88 +.31	25.0 +1.9	52.12+1.00	28.7 +0.1	32.65 +.82	16.8 0.0	45.96 +.31	53.2 +1.8
June 8.8	24.19 .32	27.0 2.0	53.13 1.01	29.2 0.7	33.49 .84	17.1 +0.6	46.27 .32	55.2 2.0
18.8	24.52 .32	29.0 2.1	54.14 .99	30.2 1.3	34.33 .84	18.0 1.2	46.59 .32	57.2 2.1
28.7	24.83 .31	31.2 2.1	55.12 .95	31.7 1.8	35.16 .81	19.5 1.7	46.92 .32	59.3 2.1
July 8.7	25.14 .29	33.3 2.1	56.04 .88	33.8 2.3	35.95 .76	21.4 2.2	47.23 .31	61.5 2.1
18.7	25.43 +.27	35.3 +2.0	56.88 +.79	36.3 +2.7	36.68 +.69	23.8 +2.6	47.53 +.29	63.5 +2.0
28.6	25.70 .24	37.3 1.9	57.62 .68	39.2 3.1	37.34 .61	26.6 3.0	47.80 .26	65.5 1.9
Aug. 7.6	25.93 .21	39.1 1.7	58.25 .56	42.5 3.4	37.91 .52	29.8 3.3	48.04 .23	67.4 1.8
17.6	26.12 .17	40.7 1.5	58.74 .43	46.0 3.6	38.37 .42	33.2 3.5	48.25 .19	69.1 1.6
27.6	26.28 .14	42.1 1.3	59.10 .29	49.7 3.7	38.73 .31	36.8 3.7	48.43 .15	70.6 1.4
Sept. 6.5	26.40 +.10	43.3 +1.1	59.32 +.15	53.5 +3.8	38.98 +.19	40.5 +3.8	48.56 +.12	71.8 +1.2
16.5	26.47 .06	44.2 0.8	59.39 .00	57.3 3.8	39.11 +.07	44.3 3.8	48.66 .08	72.9 0.9
26.5	26.51 +.02	44.9 0.6	59.32 −.14	61.1 3.7	39.13 −.04	48.1 3.7	48.72 .04	73.7 0.7
Oct. 6.4	26.52 −.01	45.4 0.4	59.11 .28	64.8 3.6	39.03 .15	51.7 3.6	48.75 +.01	74.3 0.5
16.4	26.49 .04	45.7 +0.2	58.76 .41	68.2 3.3	38.82 .26	55.2 3.4	48.74 −.02	74.6 0.3
26.4	26.45 −.06	45.8 0.0	58.28 −.53	71.4 +3.0	38.51 −.36	58.4 +3.1	48.71 −.04	74.8 +0.1
Nov. 5.4	26.37 .08	45.7 −0.2	57.69 .64	74.3 2.6	38.10 .45	61.3 2.7	48.65 .06	74.8 −0.1
15.3	26.29 .09	45.4 0.3	57.00 .73	76.7 2.1	37.60 .53	63.8 2.2	48.58 .08	74.6 0.3
25.3	26.20 .10	45.0 0.5	56.22 .81	78.6 1.6	37.03 .60	65.8 1.7	48.49 .09	74.2 0.4
Dec. 5.3	26.10 .10	44.5 0.6	55.38 .86	79.9 1.0	36.40 .65	67.2 1.2	48.39 .10	73.8 0.5
15.3	25.99 −.10	43.8 −0.7	54.50 −.89	80.7 +0.4	35.73 −.68	68.1 +0.6	48.29 −.10	73.2 −0.6
25.2	25.89 .10	43.1 0.7	53.60 .89	80.8 −0.2	35.04 .69	68.4 0.0	48.19 .10	72.5 0.7
35.2	25.80 −.09	42.4 −0.8	52.71 −.88	80.3 −0.8	34.35 −.69	68.0 −0.6	48.09 −.10	71.8 −0.8

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Casiop.	22 Androm.	σ Androm.	ι Ceti.	6 Urs. Min., S. P.	44 Piscium.	π Androm.	ο Cassiop.
	31° 27′	44° 32′	53° 49′	99° 25′	358° 18′	88° 40′	56° 53′	42° 18′
	h m 0 3	h m 0 4	h m 0 12	h m 0 13	h m 0 13	h m 0 19	h m 0 31	h m 0 38
	s	s	s	s	s	s	s	s
Jan. 0.2	23.19 – .32	41.05 – .22	39.91 – .17	54.42 – .10	96.21+7.74	51.03 – .12	5.63 – .17	41.16 – .23
10.2	22.87 .30	40.84 .20	39.75 .16	54.32 .09	103.94 7.61	50.91 .10	5.46 .16	40.93 .23
20.2	22.58 .28	40.65 .17	39.60 .15	54.23 .08	111.41 7.23	50.83 .08	5.31 .15	40.70 .22
30.2	22.31 – .26	40.49 – .15	39.46 – .14	54.15 – .07	118.37+6.60	50.75 – .08	5.17 – .14	40.50 – .20
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Aug. 26.6	27.73 + .24	44.99 + .18	43.58 + .20	57.90 + .17	60.05–3.00	54.41 + .17	9.08 + .20	44.85 + .24
Sept. 5.5	27.93 .17	45.15 .14	43.75 .16	58.05 .14	57.50 2.05	54.56 .15	9.26 .17	45.08 .20
15.5	28.07 .11	45.27 .10	43.89 .11	58.18 .10	55.95–1.03	54.70 .11	9.42 .13	45.25 .16
25.5	28.15 + .05	45.35 .05	43.97 .06	58.26 .06	55.45+0.04	54.78 .07	9.52 .09	45.39 .11
Oct. 5.5	28.17 – .01	45.38 + .01	44.01 + .02	58.31 + .03	56.04 1.14	54.83 .04	9.59 .05	45.47 .06
15.4	28.12 – .07	45.36 – .03	44.02 – .01	58.32 .00	57.74+2.24	54.86 + .01	9.62 + .01	45.50 + .01
25.4	28.03 .12	45.31 .07	44.00 .04	58.31 – .02	60.52 3.32	54.86 – .02	9.62 – .02	45.50 – .03
Nov. 4.4	27.88 .17	45.22 .11	43.93 .07	58.28 .05	64.38 4.36	54.83 .04	9.59 .05	45.44 .07
14.4	27.69 .21	45.09 .14	43.85 .10	58.21 .07	69.25 5.32	54.77 .06	9.52 .08	45.36 .10
24.3	27.46 .25	44.95 .16	43.73 .12	58.13 .09	75.02 6.15	54.70 .08	9.43 .10	45.24 .13
Dec. 4.3	27.20 – .28	44.78 – .18	43.61 – .14	58.03 – .10	81.56+6.83	54.61 – .09	9.33 – .12	45.09 – .16
14.3	26.90 .30	44.59 .19	43.46 .15	57.93 .10	88.71 7.34	54.52 .09	9.20 .13	44.91 .19
24.2	26.59 .31	44.39 .20	43.31 .16	57.82 .11	96.26 7.61	54.42 .10	9.07 .14	44.71 .20
34.2	26.28 – .32	44.19 – .21	43.15 – .17	57.72 – .11	103.96+7.68	54.32 – .10	8.92 – .15	44.51 – .21

Mean Solar Date.	δ Piscium.	γ Cassiop.	μ Androm.	43 Cephei.	κ Tucanæ.	f Piscium.	κ Octantis, S. P.	υ Androm.
	83° 0′	29° 52′	52° 5′	4° 19′	159° 27′	86° 57′	184° 46′	49° 8′
	h m 0 43	h m 0 50	h m 0 50	h m 0 53	h m 1 12	h m 1 12	h m 1 23	h m 1 30
	s	s	s	s	s	s	s	s
Jan. 0.3	3.87 – .12	10.07 – .33	44.44 – .15	57.81 –2.84	7.43– .54	13.01 – .11	23.90 +2.81	26.75 – .15
10.2	3.76 .11	9.74 .34	44.28 .16	54.97 2.83	6.90 .52	12.89 .12	26.74 2.84	26.58 .18
20.2	3.65 .10	9.40 .33	44.12 .17	52.14 2.79	6.39 .51	12.78 .11	29.59 2.78	26.38 .20
30.2	3.55 – .09	9.08 – .32	43.94 – .18	49.38 –2.70	5.88– .50	12.67 – .10	32.31 +2.60	26.17 – .21
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sept. 5.6	7.23 + .17	14.47 + .27	48.05 + .20	73.97 +1.48	11.76+ .45	16.11 + .20	19.86 –1.57	30.06 + .26
15.5	7.38 .13	14.71 .21	48.23 .16	75.26 1.08	12.13 .32	16.28 .16	18.52 1.11	30.30 .21
25.5	7.50 .09	14.89 .15	48.37 .12	76.14 0.67	12.40 .20	16.42 .12	17.64 .67	30.49 .17
Oct. 5.5	7.58 .06	15.01 .08	48.47 .08	76.60 +0.25	12.54+ .09	16.53 .09	17.20 – .20	30.65 .13
15.5	7.63 + .03	15.06 + .02	48.51 .04	76.64 –0.18	12.58– .01	16.60 .06	17.25 + .30	30.76 .09
25.4	7.64 .00	15.06 – .04	48.54 + .01	76.23 –0.63	12.51– .12	16.65 + .03	17.82 + .80	30.83 + .06
Nov. 4.4	7.63 – .02	14.98 .09	48.52 – .03	75.39 1.07	12.34 .21	16.66 .00	18.86 1.30	30.87 + .02
14.4	7.60 .05	14.87 .15	48.47 .06	74.12 1.46	12.08 .30	16.65 – .02	20.42 1.76	30.87 – .02
24.3	7.54 .07	14.68 .20	48.40 .09	72.48 1.83	11.73 .39	16.62 .04	22.36 2.13	30.83 .06
Dec. 4.3	7.46 .08	14.46 .24	48.29 .11	70.46 2.18	11.29 .45	16.56 .06	24.70 2.46	30.75 .09
14.3	7.38 – .09	14.21 – .28	48.17 – .13	68.12 –2.47	10.82– .49	16.50 – .08	27.28 +2.68	30.65 – .12
24.3	7.28 .10	13.90 .31	48.02 .15	65.53 2.66	10.31 .52	16.41 .10	30.06 2.82	30.52 .15
34.2	7.18 – .11	13.59 – .33	47.87 – .16	62.80 –2.77	9.77– .55	16.31 – .11	32.92 +2.81	30.37 – .17

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	π Piscium.	ν Piscium.	ζ Ceti.	γ Androm.	β Trianguli.	4 Urs. Min., S. P.	γ Trianguli.	67 Ceti.
	78° 25′	85° 4′	100° 52′	48° 11′	55° 31′	348° 3′	56° 39′	96° 55′
	h m 1 31	h m 1 35	h m 1 46	h m 1 57	h m 2 3	h m 2 9	h m 2 10	h m 2 11
	s	s	s	s	s	s	s	s
Jan. 0.3	21.81 − .11	48.17 − .10	7.45 − .10	15.57 − .16	6.51 − .13	15.18 +1.04	53.13 − .12	35.53 − .08
10.3	21.70 .12	48.06 .11	7.33 .11	15.39 .18	6.37 .14	16.26 1.10	53.00 .14	35.44 .10
20.2	21.58 .12	47.95 .12	7.22 .12	15.22 .19	6.22 .16	17.39 1.14	52.85 .16	35.33 .12
30.2	21.46 .12	47.82 .12	7.09 .13	15.02 .20	6.04 .17	18.54 1.14	52.68 .17	35.20 .14
Feb. 9.2	21.34 .12	47.71 .11	6.96 .12	14.82 .19	5.88 .16	19.68 1.10	52.52 .18	35.06 .13
19.2	21.22 − .12	47.61 − .10	6.84 − .11	14.64 − .17	5.72 − .15	20.76 +1.04	52.34 − .19	34.93 − .11
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sept 25.6	25.14 + .15	51.43 + .15	10.54 + .16	19.18 + .19	9.93 + .19	12.90 − .52	56.47 + .18	38.45 + .17
Oct. 5.5	25.28 .12	51.56 .12	10.69 .13	19.36 .17	10.10 .16	12.43 .39	56.65 .17	38.61 .15
15.5	25.38 .08	51.67 .09	10.80 .10	19.52 .14	10.26 .13	12.12 .24	56.82 .15	38.74 .12
25.5	25.43 + .05	51.73 + .06	10.89 + .06	19.64 + .09	10.37 + .10	11.96 − .07	56.95 + .11	38.85 + .08
Nov. 4.5	25.47 + .03	51.78 + .03	10.93 + .03	19.71 .05	10.46 .06	11.99 + .12	57.03 .07	38.91 .05
14.5	25.49 .00	51.80 .00	10.95 .00	19.74 + .02	10.50 + .02	12.19 .30	57.09 + .03	38.95 + .03
24.4	25.47 − .03	51.79 − .03	10.94 − .03	19.75 − .03	10.51 − .01	12.60 .48	57.10 .00	38.97 .00
Dec. 4.4	25.42 .05	51.75 .06	10.89 .05	19.69 .07	10.49 .04	13.16 .65	57.09 − .03	38.96 − .03
14.3	25.36 − .07	51.68 − .08	10.84 − .07	19.62 − .10	10.43 − .07	13.90 + .81	57.04 − .06	38.91 − .06
24.3	25.28 .09	51.59 .09	10.75 .09	19.50 .13	10.35 .10	14.78 .95	56.96 .09	38.83 .08
34.3	25.18 − .11	51.50 − .10	10.65 − .11	19.36 − .16	10.23 − .13	15.80 +1.08	56.85 − .12	38.75 − .09

Mean Solar Date.	δ Hydri.	δ Ceti.	μ Hydri.	θ Persei.	σ Arietis.	47 Cephei.	ε Arietis.	β Persei. (*Algol.*)
	159° 9′	90° 8′	169° 35′	41° 14′	75° 22′	11° 1′	69° 6′	49° 28′
	h m 2 19	h m 2 33	h m 2 33	h m 2 36	h m 2 45	h m 2 51	h m 2 53	h m 3 1
	s	s	s	s	s	s	s	s
Jan. 0.3	51.83 − .52	56.66 − .09	63.11 −1.14	49.07 − .16	31.57 − .08	44.89 − .71	1.98 − .07	8.27 − .08
10.3	51.30 .55	56.56 .10	61.96 1.18	48.89 .19	31.48 .10	44.10 .85	1.89 .10	8.16 .13
20.3	50.74 .57	56.45 .12	60.75 1.22	48.69 .21	31.37 .12	43.19 .96	1.78 .12	8.01 .17
30.3	50.17 .57	56.32 .13	59.52 1.23	48.46 .23	31.24 .13	42.18 1.02	1.64 .14	7.82 .19
Feb. 9.2	49.61 .55	56.19 .14	58.30 1.21	48.23 .24	31.10 .14	41.15 1.04	1.50 .15	7.62 .20
19.2	49.07 − .53	56.05 − .15	57.10 −1.18	47.99 − .25	30.96 − .14	40.10 −1.06	1.35 − .16	7.41 − .21
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sept. 25.6	54.38 + .39	59.43 + .18	64.90 + .72	52.60 + .31	34.41 + .21	51.45 + .91	4.83 + .21	11.39 + .29
Oct. 5.6	54.70 .28	59.60 .16	65.51 .52	52.88 .26	34.61 .19	52.30 .79	5.03 .20	11.66 .26
15.6	54.93 .17	59.76 .14	65.93 .31	53.12 .21	34.78 .16	53.02 .65	5.22 .18	11.90 .22
25.5	55.05 + .06	59.89 + .11	66.12 + .07	53.30 + .16	34.93 + .13	53.59 + .49	5.40 + .15	12.10 + .18
Nov. 4.5	55.05 − .05	59.98 .08	66.08 − .15	53.44 .12	35.04 .10	54.00 .30	5.52 .11	12.26 .14
14.5	54.95 .16	60.05 .05	65.82 .37	53.54 .07	35.13 .07	54.21 + .13	5.62 .08	12.38 .11
24.4	54.73 .26	60.09 + .02	65.34 .57	53.59 + .02	35.18 .03	54.25 − .05	5.68 .05	12.47 .06
Dec. 4.4	54.43 .35	60.10 − .01	64.68 .75	53.59 − .03	35.20 + .01	54.09 .26	5.72 + .02	12.51 + .02
14.4	54.04 − .42	60.07 − .04	63.83 − .92	53.54 − .08	35.20 − .02	53.73 − .45	5.72 − .02	12.51 − .02
24.4	53.59 .48	60.02 .06	62.83 1.05	53.44 .12	35.16 .05	53.19 .61	5.67 .05	12.46 .07
34.3	53.08 − .53	59.95 − .08	61.73 −1.15	53.30 − .16	35.09 − .08	52.50 − .75	5.61 − .08	12.37 − .10

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ρ Octantis. S. P.	ι Hydri.	f Tauri.	γ Camelop.	γ Hydri.	ε Persei.	A¹ Tauri.	c Persei.
	185° 54′	167° 47′	77° 26′	19° 0′	164° 34′	50° 18′	68° 13′	42° 35′
	h m 3 18	h m 3 18	h m 3 24	h m 3 38	h m 3 48	h m 3 50	h m 3 58	h m 4 0
	s	s	s	s	s	s	s	s
Jan. 0.4	12.88 +2.19	45.04 − .86	54.58 − .05	58.35 − .28	59.57 − .58	36.43 − .05	18.75 − .04	49.46 − .05
10.3	15.14 2.32	44.13 .96	54.51 .08	58.02 .38	58.92 .69	36.35 .10	18.69 .07	49.38 .11
20.3	17.52 2.44	43.12 1.03	54.42 .11	57.60 .46	58.19 .78	36.23 .14	18.61 .10	49.25 .16
30.3	20.01 2.49	42.06 1.07	54.29 .13	57.11 .52	57.37 .85	36.06 .17	18.49 .13	49.06 .20
Feb. 9.3	22.50 2.49	40.98 1.08	54.16 .14	56.56 .56	56.51 .88	35.88 .19	18.35 .15	48.85 .22
19.2	24.99 +2.44	39.90 −1.07	54.01 − .15	55.98 − .58	55.61 − .90	35.68 − .20	18.20 − .16	48.62 − .24
29.2	27.37 +2.32	38.84 −1.03	53.86 − .16	55.40 − .59	54.72 − 88	35.47 − .21	18.03 − .17	48.37 − .26
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Oct. 5.6	20.64 −1.01	45.09 + .62	57.32 + .22	63.02 + .67	58.77 + .59	39.43 + .32	21.38 + .27	52.61 + .34
15.6	19.75 .71	45.64 .45	57.54 .19	63.63 .55	59.30 .47	39.73 .28	21.64 .24	52.93 .31
25.5	19.22 − .32	45.99 + .26	57.71 + .17	64.14 + .46	59.71 + .34	39.99 + .24	21.87 + .21	53.23 + .28
Nov. 4.5	19.12 + .12	46.17 + .08	57.87 .15	64.55 .36	59.98 .20	40.21 .20	22.05 .18	53.49 .24
14.5	19.46 .54	46.14 − .11	58.01 .11	64.87 .26	60.11 + .04	40.39 .17	22.23 .16	53 72 .20
24.5	20.20 .95	45.94 .30	58.11 .07	65.08 .15	60.07 − .10	40.55 .13	22.37 .12	53.89 .15
Dec. 4.4	21.36 1.35	45.54 .48	58.16 .04	65.17 + .04	59.91 .24	40.66 .08	22.47 .08	54.02 .10
14.4	22.90 +1.69	44.98 − .64	58.18 + .01	65.15 − .07	59.59 − .40	40.71 + .03	22.53 + .04	54.09 + .04
24.4	24.75 1.98	44.26 .79	58.18 − .03	65.01 .19	59.11 .53	40.72 − .02	22.55 .00	54.10 − .01
34.4	26.87 +2.23	43.40 − .92	58.12 − .06	64.75 − .32	58.54 − .60	40.68 − .06	22.54 − .04	54.06 − .06

Mean Solar Date.	o¹ Eridani.	η Urs. Min., S. P.	δ Mensæ.	m Persei.	τ Tauri.	i Tauri.	ζ Aurigæ.	β Eridani.
	97° 7′	346° 0′	170° 28′	47° 10′	67° 15′	71° 21′	49° 5′	95° 14′
	h m 4 6	h m 4 20	h m 4 25	h m 4 25	h m 4 35	h m 4 45	h m 4 54	h m 5 2
	s	s	s	s	s	s	s	s
Jan. 0.4	35.93 − .04	36.23 + .46	26.33 − .88	49.29 − .04	46.02 + .01	3.66 + .04	56.14 + .02	32.89 .00
10.4	35.87 .07	36.77 .63	25.33 1.08	49.23 .07	46.00 − .04	3.66 − .02	56.13 − .04	32.88 − .03
20.4	35.79 .10	37.48 .77	24.16 1.24	49.15 .11	45.93 .08	3.61 .07	56.07 .09	32.83 .06
30.3	35.68 .12	38.30 .86	22.85 1 36	49.00 .16	45.83 .11	3.53 .11	55.95 .14	32.74 .09
Feb. 9.3	35.54 .14	39.19 .92	21.44 1.43	48.82 .20	45.70 .14	3.40 .14	55.79 .18	32.63 .12
19.3	35.40 − .16	40.13 + .95	19.99 −1.47	48.60 − .22	45.55 − .16	3.25 − .16	55.60 − .20	32.49 − .15
29.2	35.23 .17	41.09 .95	18.50 1.48	48.38 .23	45.37 .17	3.08 .17	55.39 .21	32.32 .17
Mar. 10.2	35.06 − .18	42.02 + .92	17.03 −1.45	48.15 − .23	45.20 − .17	2.91 − .17	55.17 − .22	32.14 − .19
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Oct. 15.6	38.31 + .20	35.63 − .74	22.12 + .88	52.45 + .31	48.70 + .27	6.21 + .26	59.05 + .34	34.91 + .25
25.6	38.51 + .18	34.96 − .60	22.90 + .68	52.75 + .29	48.96 + .25	6.46 + .25	59.38 + .32	35.14 + .24
Nov. 4.6	38.69 .16	34.43 .45	23.47 .45	53.04 .26	49.20 .22	6.71 .23	59.68 .29	35.37 .22
14.5	38.84 .14	34.05 .30	23.79 + .21	53.28 .22	49.40 .19	6.92 .20	59.96 .26	35.57 .19
24.5	38.97 .11	33.83 − .14	23.88 − .04	53.48 .18	49.57 .16	7.09 .17	60 20 .21	35.75 .16
Dec. 4.5	39.06 .07	33.78 + .04	23.71 .29	53.64 .13	49.72 .12	7.24 .13	60.38 .16	35.89 .13
14.5	39.10 + .03	33.91 + .22	23.29 − .54	53.74 + .08	49.82 + .08	7.36 + .09	60.53 + .11	36.00 + .09
24.4	39.12 .00	34.21 .39	22.62 .78	53.79 + .02	49.87 + .03	7.42 .05	60.61 .06	36.06 + .04
34.4	39.10 − .04	34.68 + .55	21.74 − .96	53.79 − .04	49.89 − .02	7.45 + .01	60.65 + .01	36.09 − .01

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	τ Orionis.	χ Aurigæ.	Groombr. 944.	κ Orionis.	ν Aurigæ.	δ Doradus.	β Aurigæ.	θ Aurigæ.
	96° 58′	57° 53′	4° 52′	99° 43′	50° 53′	155° 47′	45° 4′	52° 48′
	h m 5 12	h m 5 25	h m 5 27	h m 5 42	h m 5 43	h m 5 44	h m 5 51	h m 5 52
	s	s	s	s	s	s	s	s
Jan. 0.4	22.24 + .02	42.45 + .06	35.41 − .20	38.62 + .04	60.82 + .06	38.20 − .15	37.12 + .09	22.03 + .00
10.4	22.25 − .02	42.48 + .01	34.96 .69	38.65 .00	60.66 + .02	38.01 .24	37.18 + .03	22.09 + .03
20.4	22.20 .06	42.47 − .04	34.03 1.15	38.63 − .04	60.86 − .03	37.73 .32	37.18 − .03	22.10 − .03
30.4	22.13 .10	42.39 .09	32.65 1.57	38.56 .08	60.79 .08	37.37 .40	37.11 .09	22.04 .07
Feb. 9.3	22.00 .13	42.28 .13	30.88 1.92	38.46 .11	60.69 .13	36.93 .47	37.00 .14	21.95 .12
19.3	21.87 − .16	42.13 − .16	28.80 −2.19	38.33 − .14	60.54 − .17	36.43 − .52	36.82 − .19	21.80 − .17
29.3	21.70 .17	41.95 .19	26.51 2.34	38.17 .16	60.34 .20	35.89 .55	36.62 .22	21.61 .19
Mar. 10.3	21.53 .18	41.75 .20	24.13 2.39	38.00 .17	60.13 .21	35.33 .57	36.39 .24	21.41 .20
20.2	21.35 − .18	41.55 − .20	21.73 −2.40	37.83 − .17	59.92 − .21	34.76 − .58	36.15 − .26	21.21 − .20
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Oct. 25.6	24.41 + .25	45.29 + .31	46.41 +2.61	40.55 + .28	63.70 + .36	37.09 + .47	40.09 + .39	24.82 + .35
Nov. 4.6	24.65 .23	45.59 .29	48.87 2.30	40.81 .25	64.05 .33	37.52 .40	40.47 .36	25.16 .33
14.6	24.87 .20	45.87 .26	50.99 1.97	41.04 .22	64.36 .30	37.89 .32	40.82 .33	25.47 .30
24.5	25.05 .17	46.12 .23	52.79 1.58	41.26 .19	64.65 .27	38.16 .23	41.14 .29	25.76 .27
Dec. 4.5	25 20 .13	46.34 .19	54.15 1.12	41.43 .16	64.90 .22	38.34 .13	41.41 .25	26.02 .23
14.5	25.31 + .09	46.50 + .14	55.04 +0.64	41.58 + .12	65.09 + .17	38.42 + .03	41.64 + .20	26.22 + .18
24.5	25.37 .05	46.62 .09	55.42 +0.13	41.68 .07	65.24 .12	38.40 − .07	41.80 .14	26.38 .13
34.4	25.41 + .01	46.69 + .05	55.30 −0.32	41.72 + .02	65.33 + .07	38.29 − .17	41.91 + .07	26.49 + .08

Mean Solar Date.	η Geminor.	ψ^1 Aurigæ.	ν Geminor.	γ Draconis, S. P.	ε Geminor.	ψ^5 Aurigæ.	θ Geminor.	ζ Mensæ.
	67° 28′	40° 39′	69° 43′	342° 41′	64° 46′	46° 19′	55° 55′	170° 42′
	h m 6 8	h m 6 16	h m 6 22	h m 6 22	h m 6 37	h m 6 38	h m 6 45	h m 6 48
	s	s	s	s	s	s	s	s
Jan. 0.5	22.05 + .10	35.76 + .13	33.55 + .11	55.82 + .02	17.79 + .13	58.03 + .16	40.93 + .16	71.01 − .15
10.5	22.12 + .05	35.87 + .06	33.63 .06	55.92 .16	17.90 .08	58.16 .09	41.06 .10	70.71 .42
20.4	22.15 .00	35.89 − .01	33.66 + .01	56.14 .30	17.95 + .03	58.21 + .02	41.13 + .04	70.15 .68
30.4	22.11 − .05	35.84 .07	33.64 − .04	56.53 .44	17.96 − .03	58.21 − .03	41.14 − .02	69.36 .90
Feb. 9.4	22.04 .09	35.74 .13	33.58 .08	57.01 .53	17.90 .08	58.14 .09	41.09 .07	68.35 1.09
19.4	21.93 − .12	35.59 − .19	33.48 − .12	57.59 + .62	17.80 − .12	58.02 − .15	40.99 − .12	67.17 −1.25
29.3	21.79 .15	35.37 .23	33.34 .15	58.26 .70	17.68 .15	57.84 .19	40.85 .16	65.84 1.38
Mar. 10.3	21.62 .17	35.12 .25	33.18 .17	59.00 .74	17.51 .17	57.64 .21	40.67 .18	64.40 1.48
20.3	21.44 .18	34.86 .26	33.01 .18	59.75 .75	17.34 .18	57.42 .23	40.48 .19	62.88 1.53
30.3	21.27 .17	34.59 .27	32.84 .17	60.51 .76	17.16 .18	57.18 .24	40.28 .20	61.34 1.55
Apr. 9.2	21.10 − .15	34.33 − .26	32.68 − .15	61.27 + .76	16.98 − .17	56.95 − .23	40.07 − .20	59.79 −1.56
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Nov. 14.6	25.04 + .29	39.49 + .39	36.42 + .29	55.93 − .58	20.71 + .31	61.42 + .39	44.03 + .35	63.60 + .97
24.6	25.31 .25	39.87 .35	36.70 .26	55.41 .46	21.01 .28	61.79 .34	44.36 .32	64.45 .73
Dec. 4.6	25.55 .21	40.19 .30	36.95 .23	55.02 .33	21.28 .25	62.11 .30	44.66 .28	65.07 .51
14.5	25.74 + .17	40.46 + .24	37.16 + .19	54.75 − .20	21.52 + .21	62.39 + .26	44.92 + .24	65.47 + .26
24.5	25.90 .13	40.67 .18	37.33 .15	54.60 − .06	21.70 .17	62.63 .20	45.14 .19	65.59 − .02
34.5	26.01 + .09	40.82 + .11	37.45 + .11	54.63 + .08	21.85 + .13	62.79 + .14	45.30 + .14	65.44 − .28

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Geminor.	63 Aurigæ.	25 Camelop.	γ^2 Volantis.	β Can. Min.	26 Lyncis.	Groombr. 1374.	ω^1 Cancri.
	69° 16′	50° 30′	7° 23′	160° 19′	81° 30′	42° 9′	15° 48′	64° 19′
	h m 6 57	h m 7 4	h m 7 8	h m 7 9	h m 7 21	h m 7 46	h m 7 47	h m 7 54
	s	s	s	s	s	s	s	s
Jan. 0.5	42.79 + .15	14.37 + .19	28.41 + .71	43.45 + .04	18.18 + .16	51.81 + .26	18.94 + .52	24.38 + .23
10.5	42.92 .10	14.53 .12	28.93 + .35	43.43 - .09	18.31 .11	52.04 .19	19.38 .34	24 57 .17
20.5	42.99 + .05	14.62 + .08	29.09 .00	43.28 21	18.41 .06	52.19 .12	19.62 .17	24.71 .11
30.4	43.01 - .01	14.65 .00	28.92 - .34	43.02 .33	18.44 + .01	52.28 + .05	19.72 + .01	24.78 + .05
Feb. 9.4	42.98 .06	14.61 - .06	28.40 .67	42.63 .43	18.43 - .04	52.29 - .02	19 65 - .15	24.81 - .01
19.4	42.90 - .10	14.53 - .11	27.58 - .95	42.17 - .52	18.37 - .08	52.23 - .09	19.40 - .31	24.76 - .06
29.4	42.78 .13	14.39 .16	26.50 1.19	41.60 .59	18.27 .11	52.11 .15	19.03 .43	24.70 .09
Mar. 10.3	42.65 .15	14.21 .19	25.20 1.37	40.98 .65	18.15 .13	51.93 .18	18.53 .54	24.59 .12
20.3	42.49 .16	14.01 .20	23.77 1.47	40.30 .68	18.01 .15	51.74 .21	17.95 .62	24.44 .15
30.3	42.32 .17	13.80 .21	22.27 1.52	39.61 .69	17.85 .16	51.51 .24	17.29 .67	24.28 .16
Apr. 9.2	42.14 - .17	13.59 - .20	20.74 -1.51	38.91 - .68	17.68 - .16	51.26 - .25	16.62 - .68	24.11 - .16
19.2	41.98 - .16	13.40 - .19	19.26 -1.45	38.24 - .65	17.53 - .15	51,02 - .24	15.94 - .67	23.95 - .15
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Nov. 24.6	45.84 + .30	17.90 + .35	38.26 +1.72	41.84 + .46	20.88 + .28	55.35 + .43	24.38 + .96	27.31 + .34
Dec. 4.6	46.12 .26	18.23 .30	39.84 1.47	42.25 .36	21.15 .25	55.76 .39	25.27 .84	27.63 .31
14.6	46.35 + .22	18.51 + .26	41.20 +1.20	42.56 + .25	21.39 + .22	56.14 + .35	26.05 + .72	27.93 + .28
24.5	46.55 .18	18.76 .22	42.24 .89	42.75 + .13	21.61 .18	56.46 .30	26.71 .60	28.20 .25
34.5	46.71 + .14	18.95 + .18	42.97 + .57	42.81 .00	21.77 + .14	56.74 + .25	27.24 + .48	28.43 + .22

Mean Solar Date.	ζ^1 Cancri.	β Cancri.	30 Monocerotis.	θ Chamæleontis.	σ Hydræ.	γ Cancri.	σ^2 Cancri. (*mean.*)	θ Hydræ.
	72° 2′	80° 29′	93° 33′	167° 8′	86° 17′	68° 9′	59° 1′	87° 14′
	h m 8 6	h m 8 10	h m 8 20	h m 8 23	h m 8 33	h m 8 37	h m 8 47	h m 9 8
	s	s	s	s	s	s	s	s
Jan. 0.6	1.57 + .20	39.94 + .20	16.25 + .19	57.25 + .31	7.27 + .19	2.63 + .25	39.84 + .27	45.03 + .26
10.6	1.75 .16	40.11 .16	16.42 .15	57.46 + .14	7.45 .17	2.86 .20	40.09 .22	45.26 .21
20.5	1.90 .11	40.26 .11	16.56 .11	57.53 - .04	7.62 .13	3.03 .15	40.29 .17	45.44 .16
30.5	1.99 .06	40.34 .06	16.64 .06	57.38 .23	7.72 .08	3.16 .09	40.43 .11	45.57 .11
Feb. 9.5	2.03 + .01	40.38 + .01	16.67 + .01	57.08 .40	7.77 + .03	3.22 + .04	40.51 + .06	45.67 .07
19.4	2.01 - .04	40.36 - .04	16.66 - .04	56.59 - .56	7.77 - .02	3.23 - .01	40.55 .00	45.70 + .02
29.4	1.94 .08	40.30 .07	16.60 .08	55.95 .71	7.72 .06	3.20 .05	40.51 - .06	45.69 - .03
Mar. 10.4	1.84 .11	40.21 .10	16.50 .10	55.18 .81	7.64 .09	3.12 .09	40.43 .10	45.63 .07
20.4	1.72 .13	40.09 .13	16.39 .12	54.33 .90	7.54 .12	3.01 .12	40.32 .13	45.55 .09
30.3	1.57 .15	39.94 .15	16.25 .14	53.39 .97	7.41 .13	2.88 .14	40.18 .15	45.45 .11
Apr. 9.3	1.41 - .16	39.80 - .15	16.10 - .15	52.39 -1.01	7.27 - .14	2.72 - .16	40.03 - .16	45.33 - .13
19.3	1.25 .15	39.65 .15	15.95 .14	51.36 1.03	7.12 .14	2.56 .15	39.86 .17	45.19 .14
29.2	1.11 .13	39.50 .13	15.81 .13	50.33 1.02	6.98 .13	2.42 .14	39.70 .16	45.06 .13
May 9.2	0.98 - .11	39.38 - .10	15.68 - .11	49.31 -1.00	6.85 - .12	2.28 - .13	39.55 - .15	44.93 - .11

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Argus.	α Lyncis.	10 Leonis Minoris.	ο Leonis.	ζ Chamæleontis.	19 Leonis Minoris.	π Leonis.	λ Ursæ Majoris.
	159° 16′	55° 9′	53° 7′	79° 37′	170° 27′	48° 26′	81° 26′	46° 33′
	9h 11m	9h 14m	9h 27m	9h 35m	9h 37m	9h 51m	9h 54m	10h 10m
	s	s	s	s	s	s	s	s
Jan. 0.6	62.94 + .38	28.97 + .31	36.95 + .33	23.39 + .26	7.88 + .82	4.68 + .40	30.49 + .29	35.40 + .40
10.6	63.27 .27	29.26 .26	37.24 .28	23.65 .24	8.58 .59	5.03 .33	30.75 .25	35.77 .35
20.6	63.48 .16	29.50 .21	37.51 .23	23.87 .20	9.06 .36	5.32 .26	30.99 .20	36.09 .29
30.5	63.58 + .04	29.68 .15	37.70 .17	24.04 .15	9.30 + .13	5.56 .20	31.16 .16	36.35 .23
Feb. 9.5	63.56 – .08	29.80 .09	37.84 .11	24.17 .09	9.31 – .10	5.72 .14	31.31 .12	36.55 .17
19.5	63.42 – .19	29.85 + .03	37.91 + .05	24.22 + .04	9.10 – .32	5.83 + .08	31.40 + .07	36.69 + .11
29.5	63.18 .29	29.86 – .02	37.93 – .01	24.25 .00	8.67 .54	5.87 + .02	31.44 + .02	36.76 + .04
Mar. 10.4	62.83 .38	29.80 .07	37.89 .07	24.23 – .04	8.03 .73	5.86 – .04	31.43 – .03	36.77 – .02
20.4	62.42 .44	29.71 .11	37.80 .11	24.16 .07	7.22 .89	5.78 .09	31.38 .06	36.71 .08
30.4	61.94 .50	29.58 .14	37.68 .14	24.08 .10	6.26 1.03	5.67 .13	31.31 .08	36.61 .12
Apr. 9.3	61.41 – .54	29.43 – .16	37.53 – .16	23.96 – .12	5.16 –1.14	5.53 – .16	31.22 – .10	36.48 – .15
19.3	60.85 .57	29.26 .17	37.36 .17	23.84 .13	3.97 1.23	5.35 .18	31.10 .12	36.32 .17
29.3	60.27 .59	29.09 .17	37.19 .17	23.71 .13	2.70 1.28	5.17 .18	30.98 .12	36.14 .18
May 9.3	59.68 .58	28.92 .16	37.03 .16	23.59 .12	1.41 1.31	4.99 .18	30.86 .12	35.95 .18
19.2	59.11 – .56	28.77 – .14	36.87 – .15	23.46 – .10	0.09 –1.32	4.81 – .16	30.74 – .11	35.77 – .17

Mean Solar Date.	μ Hydræ.	β Leonis Minoris.	α Antliæ.	β Octantis, S. P.	41 Leonis Minoris.	δ^2 Chamæleontis.	46 Leonis Minoris.	Groombr. 1706.
	106° 17′	52° 44′	120° 31′	188° 3′	66° 15′	169° 58′	55° 12′	11° 39′
	10h 20m	10h 21m	10h 22m	10h 34m	10h 37m	10h 44m	10h 47m	10h 51m
	s	s	s	s	s	s	s	s
Jan. 20.7	52.54 + .21	39.22 + .28	13.09 + .23	53.21 – .62	33.25 + .26	49.78 + .76	17.08 + .31	23.71 + .95
30.6	52.73 .17	39.48 .23	13.29 .17	52.72 .37	33.49 .22	50.42 .54	17.36 .25	24.58 .79
Feb. 9.6	52.88 .13	39.68 .17	13.44 .12	52.46 – .13	33.68 .17	50.85 .33	17.58 .19	25.29 .60
19.5	52.99 .08	39.81 .11	13.54 .07	52.45 + .10	33.82 .12	51 07 + .12	17.74 .14	25.78 .38
29.5	53.03 + .03	39.89 + .05	13.58 + .02	52.66 .33	33.92 .07	51.09 – .08	17.86 .08	26.06 + .17
Mar. 10.5	53.05 – .01	39.91 .00	13.58 – .02	53.11 + .57	33.95 + .02	50.91 – .28	17.90 + .03	26.12 – .03
20.4	53.02 .05	39.88 – .05	13.53 .06	53.80 .80	33.95 – .02	50.54 .46	17.91 – .02	25.99 .24
30.4	52.95 .08	39.81 .09	13.45 .09	54.70 1.01	33.90 .06	49.99 .62	17.86 .06	25.65 .43
Apr. 9.4	52.86 .10	39.70 .12	13.35 .11	55.82 1.19	33.83 .08	49.29 .77	17.78 .09	25.14 .58
19.4	52.76 .11	39.57 .14	13.22 .13	57.08 1.34	33.74 .10	48.45 .90	17.68 .11	24.50 .70
29.3	52.64 – .12	39.42 – .15	13.07 – .14	58.51 +1.48	33.63 – .12	47.50 –1.00	17.55 – .13	23.74 – .79
May 9.3	52.52 .13	39.26 .16	12.93 .15	60.05 1.59	33.50 .13	46.44 1.08	17.41 .14	22.91 .86
19.3	52.39 .12	39.10 .16	12.78 .15	61.69 1.67	33.38 .13	45.35 1.13	17.27 .15	22.02 .89
29.3	52.27 .12	38.95 .15	12.62 .14	63.39 1.70	33.25 .12	44.19 1.17	17.12 .14	21.13 .87
June 8.2	52.15 – .11	38.81 – .14	12.49 – .13	65.09 +1.67	33.14 – .10	43.01 –1.18	16.99 – .13	20.27 – .85

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Octantis.	p^3 Leonis.	ψ Urs. Maj.	ν Urs. Maj.	ξ Hydræ.	χ Urs. Maj.	π Virginis.	ε Corvi.
	174° 1′ h m 10 59	87° 27′ h m 11 1	44° 55′ h m 11 3	56° 19′ h m 11 12	121° 16′ h m 11 27	41° 37′ h m 11 40	82° 47′ h m 11 55	112° 1′ h m 12 4
	s	s	s	s	s	s	s	s
Feb. 9.6	72.05 + .61	24.36 + .18	37.03 + .23	40.07 + .21	42.02 + .19	22.44 + .31	20.93 + .22	34.68 + .24
19.6	72.53 + .31	24.51 .13	37.23 .18	40.25 .16	42.19 .15	22.72 .24	21.13 .18	34.89 .19
29.5	72.67 − .01	24.62 .08	37.39 .12	40.39 .11	42.32 .11	22.91 .17	21.29 .14	35.05 .14
Mar. 10.5	72.51 .34	24.67 + .04	37.46 + .05	40.47 .06	42.41 .07	23.04 .10	21.41 .10	35.18 .10
20.5	71.99 .65	24.69 .00	37.48 − .01	40.50 + .01	42.43 + .02	23.11 + .03	21.48 .06	35.26 .06
30.5	71.20 − .95	24.67 − .03	37.43 − .06	40.49 − .03	42.43 − .02	23.12 − .03	21.53 + .03	35.30 + .03
Apr. 9.4	70.11 1.22	24.63 .06	37.35 .10	40.43 .07	42.39 .05	23.06 .08	21.53 .00	35.31 .00
19.4	68.80 1.43	24.55 .08	37.24 .13	40.35 .10	42.32 .08	22.97 .11	21.51 − .03	35.30 − .03
29.4	67.26 1.62	24.47 .09	37.09 .16	40.24 .12	42.24 .10	22.84 .15	21.45 .06	35.25 .05
May 9.3	65.55 1.78	24.38 .10	36.91 .18	40.12 .13	42.13 .11	22.67 .18	21.39 .07	35.19 .07
19.3	63.70 −1.89	24.27 − .10	36.73 − .19	39.98 − .14	42.01 − .12	22.49 − .19	21.31 − .08	35.10 − .08
29.3	61.76 1.96	24.17 .11	36.54 .18	39.85 .14	41.89 .13	22.30 .20	21.23 .09	35.02 .09
June 8.3	59.78 1.98	24.06 .10	36.36 .17	39.70 .14	41.74 .14	22.09 .20	21.13 .10	34.92 .10
18.2	57.81 −1.95	23.97 − .08	36.19 − .16	39.57 − .13	41.61 − .12	21.90 − .19	21.03 − .10	34.81 − .11

Mean Solar Date.	2 Can. Ven.	6 Urs. Min.	δ^2 Corvi.	β Can. Ven.	γ Virginis, (*mean.*)	31 Comæ Berenices.	γ Cassiop., S. P.	43 Cephei, S. P.
	48° 44′ h m 12 10	1° 42′ h m 12 14	105° 55′ h m 12 24	48° 3′ h m 12 28	90° 51′ h m 12 36	61° 52′ h m 12 46	330° 8′ h m 12 50	355° 41′ h m 12 53
	s	s	s	s	s	s	s	s
Feb. 9.6	44.06 + .30	64.81 +5.60	17.10 + .24	37.96 + .32	11.72 + .24	27.10 + .29	8.79 − .31	46.77 −2.40
19.6	44.33 .25	69.93 4.53	17.32 .20	38.24 .26	11.95 .20	27.37 .25	8.51 .24	44.58 2.00
29.6	44.55 .20	73.86 3.30	17.50 .16	38.48 .20	12.13 .16	27.60 .20	8.31 .17	42.77 1.58
Mar. 10.5	44.70 .14	76.47 1.92	17.64 .13	38.65 .15	12.28 .13	27.78 .16	8.18 .10	41.42 1.10
20.5	44.81 .08	77.69 +0.51	17.76 .09	38.78 .10	12.40 .10	27.92 .12	8.11 − .03	40.57 0.57
30.5	44.85 + .03	77.49 −0.68	17.81 + .05	38.85 + .05	12.48 + .06	28.01 + .07	8.11 + .06	40.28 −0.01
Apr. 9.5	44.86 − .02	75.92 2.20	17.85 + .02	38.87 .00	12.52 + .03	28.05 + .03	8.22 .14	40.56 +0.53
19.4	44.81 .06	73.10 3.41	17.85 − .01	38.85 − .04	12.53 .00	28.06 .00	8.40 .22	41.33 1.03
29.4	44.74 .09	69.10 4.48	17.84 .04	38.78 .08	12.52 − .02	28.05 − .03	8.65 .30	42.62 1.52
May 9.4	44.63 .12	64.15 5.32	17.78 .06	38.69 .11	12.50 .04	27.99 .06	9.00 .38	44.37 1.93
19.4	44.50 − .14	58.37 −6.07	17.72 − .07	38.57 − .13	12.43 − .06	27.93 − .08	9.41 + .43	46.47 +2.28
29.3	44.36 .15	52.02 6.54	17.64 .08	38.43 .15	12.37 .07	27.83 .10	9.85 .47	48.93 2.56
June 8.3	44.20 .16	45.30 6.81	17.56 .09	38.28 .16	12.30 .08	27.73 .11	10.34 .52	51.59 2.74
18.3	44.04 − .15	38.39 −6.91	17.46 − .10	38.11 − .17	12.21 − .09	27.62 − .11	10.90 + .57	54.42 +2.86

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Muscæ.	ε Virginis.	20 Can. Ven.	κ Octantis.	B.A.C. 4536.	m Virginis.	θ Apodis.	π Hydræ.
	160° 58′	78° 28′	48° 52′	175° 14′	52° 16′	98° 9′	166° 16′	116° 10′
	h m 12 54	h m 12 56	h m 13 12	h m 13 23	h m 13 29	h m 13 35	h m 13 54	h m 14 0
	s	s	s	s	s	s	s	s
Feb. 29.6	53.15 + .43	48.99 + .20	43.43 + .25	39.18 +1.84	59.69 + .27	57.21 + .22	50.73 + .82	13.68 + .27
Mar. 10.6	53.53 .33	49.15 .16	43.66 .20	40.83 1.46	59.94 .22	57.42 .19	51.48 .69	13.93 .23
20.6	53.80 .23	49.30 .12	43.84 .15	42.10 1.08	60.12 .17	57.59 .16	52.10 .56	14.14 .19
30.5	53.99 .13	49.40 .08	43.96 .10	43.01 .70	60.27 .12	57.74 .13	52.60 .43	14.30 .15
Apr. 9.5	54.06 + .04	49.46 .05	44.04 .05	43.52 + .32	60.37 .07	57.85 .10	52.96 .30	14.45 .13
19.5	54.06 − .05	49.49 + .02	44.06 + .01	43.65 − .06	60.41 + .03	57.93 + .06	53.20 + .17	14.56 + .10
29.5	53.96 .14	49.49 − .01	44.06 − .03	43.39 .45	60.43 .00	57.97 .03	53.30 + .04	14.65 .07
May 9.4	53.77 .22	49.48 .03	44.00 .07	42.76 .83	60.41 − .04	58.00 + .01	53.27 − .09	14.68 .03
19.4	53.51 .30	49.43 .06	43.92 .09	41.74 1.17	60.35 .07	57.99 − .02	53.12 .21	14.71 + .01
29.4	53.18 .37	49.36 .07	43.82 .11	40.42 1.47	60.26 .10	57.96 .04	52.84 .33	14.70 − .02
June 8.4	52.77 − .44	49.29 − .08	43.69 − .14	38.82 −1.76	60.15 − .12	57.91 − .05	52.45 − .45	14.68 − .05
18.3	52.32 .48	49.21 .09	43.54 .16	36.92 2.00	60.03 .14	57.86 .07	51.94 .55	14.60 .08
28.3	51.82 .49	49.11 .10	43.38 .17	34.83 2.17	59.89 .15	57.78 .08	51.35 .63	14.53 .09
July 8.3	51.34 − .48	49.00 − .11	43.20 − .18	32.57 −2.32	59.73 − .16	57.69 − .09	50.68 − .69	14.42 − .10

Mean Solar Date.	d Bootis.	κ Virginis.	4 Urs. Min.	δ Octantis.	λ Bootis.	λ Virginis.	μ Hydri, S. P.	α Apodis.
	64° 24′	99° 46′	11° 57′	173° 10′	43° 25′	102° 52′	190° 25′	168° 35′
	h m 14 5	h m 14 7	h m 14 9	h m 14 9	h m 14 12	h m 14 13	h m 14 33	h m 14 34
	s	s	s	s	s	s	s	s
Mar. 20.6	29.74 + .19	9.00 + .18	23.31 + .62	44.92 +1.20	18.52 + .23	16.82 + .20	54.11 − .82	31.17 + .85
30.6	29.91 .15	9.16 .15	23.82 .42	45.98 .94	18.72 .18	17.00 .16	53.38 .64	31.95 .71
Apr. 9.5	30.03 .11	9.31 .12	24.14 .23	46.80 .68	18.88 .13	17.15 .13	52.83 .46	32.59 .56
19.5	30.13 .08	9.41 .09	24.27 + .04	47.33 .40	18.99 .08	17.27 .10	52.45 .28	33.08 .40
29.5	30.19 .05	9.50 .06	24.22 − .14	47.60 + .13	19.04 + .03	17.36 .07	52.28 − .08	33.40 .24
May 9.5	30.23 + .02	9.53 + .04	23.98 − .32	47.59 − .14	19.05 − .02	17.41 + .04	52.29 + .11	33.56 + .08
19.4	30.23 − .02	9.57 + .02	23.58 .47	47.31 .40	19.00 .06	17.44 + .02	52.51 .31	33.56 − .08
29.4	30.19 .05	9.58 − .01	23.04 .61	46.78 .66	18.92 .10	17.46 .00	52.91 .49	33.40 .24
June 8.4	30.13 .07	9.54 .04	22.36 .73	45.98 .91	18.81 .13	17.43 − .03	53.50 .67	33.08 .39
18.3	30.06 .08	9.50 .06	21.58 .82	44.96 1.12	18.67 .16	17.39 .05	54.26 .83	32.61 .53
28.3	29.97 − .10	9.43 − .08	20.71 − .89	43.73 −1.31	18.49 − .19	17.32 − .07	55.16 + .96	32.01 − .66
July 8.3	29.85 .12	9.35 .09	19.79 .94	42.35 1.46	18.30 .21	17.24 .09	56.18 1.07	31.28 .77
18.3	29.72 .13	9.25 .11	18.82 .97	40.82 1.59	18.08 .22	17.14 .10	57.31 1.15	30.46 .86
28.2	29.58 − .14	9.14 − .12	17.84 − .99	39.17 −1.69	17.86 − .22	17.03 − .11	58.49 +1.20	29.56 − .92

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	33 Bootis.	47 Cephei, S. P.	γ Scorpii.	δ Bootis.	ρ Octantis.	β Cor. Bor.	γ Camelop., S. P.	δ¹ Apodis.
	45° 8′	348° 59′	114° 51′	56° 17′	174° 6′	60° 31′	341° 0′	168° 25′
	h m 14 34	h m 14 51	h m 14 57	h m 15 11	h m 15 18	h m 15 23	h m 15 38	h m 16 4
	s	s	s	s	s	s	s	s
Mar. 30.6	50.98 + .20	36.86 − .49	45.89 + .22	10.37 + .22	33.65 +1.72	23.85 + .24	53.94 − .41	16.24 +1.10
Apr. 9.6	51.15 .15	36.46 .29	46.09 .19	10.57 .18	35.23 1.45	24.07 .20	53.60 .27	17.27 .97
19.5	51.28 .11	36.27 − .08	46.26 .16	10.72 .14	36.54 1.16	24.24 .16	53.41 .13	18.18 .84
29.5	51.37 .06	36.30 + .14	46.41 .13	10.85 .11	37.54 .85	24.39 .12	53.33 − .01	18.95 .70
May 9.5	51.41 + .02	36.54 .36	46.52 .10	10.95 .08	38.23 .53	24.49 .08	53.39 + .12	19.57 .54
19.5	51.41 − .03	37.03 + .57	46.60 + .07	11.00 + .04	38.60 + .21	24.56 + .05	53.56 + .25	20.03 + .37
29.4	51.35 .07	37.68 .75	46.65 + .03	11.01 .00	38.63 − .14	24.59 + .02	53.88 .37	20.31 .20
June 8.4	51.26 .10	38.51 .90	46.66 .00	11.00 − .04	38.31 .48	24.59 − .02	54.30 .48	20.42 + .03
18.4	51.15 .13	39.48 1.04	46.65 − .03	10.94 .07	37.67 .79	24.55 .05	54.85 .58	20.36 − .15
28.4	51.01 .16	40.60 1.16	46.60 .06	10.86 .10	36.73 1.08	24.48 .08	55.46 .66	20.11 .33
July 8.3	50.82 − .19	41.80 +1.23	46.53 − .08	10.75 − .13	35.50 −1.35	24.39 − .11	56.17 + .73	19.70 − .48
18.3	50.61 .21	43.07 1.28	46.44 .10	10.60 .15	34.03 1.58	24.26 .13	56.93 .78	19.15 .61
28.3	50.40 .22	44.36 1.32	46.32 .12	10.44 .17	32.33 1.76	24.12 .15	57.73 .81	18.47 .74
Aug. 7.2	50.17 .23	45.68 1.30	46.18 .14	10.26 .18	30.52 1.85	23.95 .17	58.55 .82	17.67 .84
17.2	49.94 .23	46.96 1.27	46.04 .15	10.07 .19	28.64 1.88	23.77 .18	59.37 .81	16.78 .90
27.2	49.72 − .22	48.21 +1.23	45.88 − .16	9.88 − .19	26.76 −1.85	23.59 − .18	60.18 + .78	15.86 − .92

Mean Solar Date.	φ Herculis.	σ Cor. Bor. (*mean.*)	γ Apodis.	η Urs. Min.	η Ophiuchi.	π Herculis.	θ Ophiuchi.	δ Aræ.
	44° 47′	55° 52′	168° 39′	14° 0′	105° 35′	53° 4′	114° 53′	150° 36′
	h m 16 5	h m 16 10	h m 16 16	h m 16 20	h m 17 4	h m 17 11	h m 17 15	h m 17 21
	s	s	s	s	s	s	s	s
Apr. 9.6	23.43 + .25	39.30 + .23	58.27 +1.07	44.43 + .66	11.79 + .28	18.13 + .30	23.35 + .32	22.38 + .55
19.6	23.66 .21	39.53 .20	59.25 .92	44.99 .51	12.06 .26	18.41 .27	23.65 .29	22.91 .50
29.6	23.85 .17	39.70 .17	60.09 .77	45.42 .36	12.31 .24	18.67 .24	23.92 .26	23.39 .45
May 9.6	24.00 .13	39.86 .14	60.78 62	45.70 .21	12.54 .21	18.88 .20	24.17 .24	23.82 .40
19.5	24.12 .08	39.98 .10	61.32 .46	45.84 + .05	12.74 .18	19.06 .16	24.40 .21	24.20 .35
29.5	24.16 + .03	40.05 + .06	61.67 + .28	45.80 − .11	12.91 + .15	19.21 + .12	24.58 + .17	24.52 + .29
June 8.5	24.18 − .01	40.09 + .02	61.86 + .09	45.62 .25	13.04 .12	19.30 .08	24.74 .14	24.77 .22
18.4	24.14 .06	40.10 − .02	61.84 − .09	45.29 .39	13.15 .08	19.36 + .04	24.87 .10	24.96 .15
28.4	24.06 .11	40.05 .06	61.67 .26	44.83 .53	13.21 + .04	19.37 − .01	24.94 .06	25.07 + .07
July 8.4	23.93 .15	39.98 .10	61.30 .43	44.24 .65	13.23 .00	19.33 .06	24.99 + .02	25.09 − .01
18.4	23.77 − .19	39.86 − .13	60.78 − .58	43.53 − .75	13.22 − .04	19.26 − .10	24.98 − .03	25.04 − .09
28.3	23.56 .22	39.72 .16	60.11 .72	42.74 .82	13.16 .07	19.14 .14	24.93 .07	24.92 .16
Aug. 7.3	23.34 .24	39.53 19	59.33 .83	41.89 .88	13.08 .10	18.97 .18	24.85 .10	24.72 .23
17.3	23.09 .26	39.34 .21	58.44 .91	40.97 .94	12.97 .12	18.78 .20	24.73 .13	24.47 .29
27.3	22.82 .27	39.12 .22	57.50 .94	40.02 .95	12.83 .15	18.57 .22	24.59 .16	24.15 .33
Sept. 6.2	22.56 − .27	38.91 − .22	56.54 − .94	39.06 − .95	12.67 − .16	18.33 − .23	24.42 − .18	23.82 − .34
16.2	22.29 .26	38.69 .22	55.59 .91	38.12 .91	12.50 .16	18.10 .24	24.23 .18	23.47 .35
26.2	22.04 .24	38.48 .23	54.71 .83	37.25 .85	12.34 .15	17.85 .23	24.07 .16	23.11 .34
Oct. 6.1	21.82 − .21	38.24 − .24	53.93 − .72	36.42 − .77	12.20 − .14	17.63 − .22	23.91 − .14	22.78 − .33

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombr. 944,S.P.	ι Herculis.	θ Herculis.	ο Herculis.	λ Sagittarii.	χ Draconis.	ζ Pavonis.	γ Lyræ.
	355° 8′	43° 56′	52° 44′	61° 15′	115° 29′	17° 19′	161° 31′	57° 28′
	h m 17 27	h m 17 36	h m 17 52	h m 18 3	h m 18 21	h m 18 22	h m 18 30	h m 18 54
	s	s	s	s	s	s	s	s
May 19.6	12.35 − .45	27.12 + .19	34.69 + .18	21.40 + .20	20.03 + .26	63.66 + .44	29.17 + .64	55.62 + .27
29.6	12.17 + .05	27.28 .14	34.86 .15	21.58 .17	20.27 .23	64.03 .31	29.78 .57	55.86 .23
June 8.5	12.46 .52	27.40 .09	35.00 .12	21.75 .14	20.50 .20	64.27 .18	30.32 .48	56.08 .19
18.5	13.21 .96	27.47 + .04	35.11 .08	21.86 .10	20.68 .17	64.38 + .05	30.74 .37	56.24 .14
28.5	14.39 1.38	27.49 − .01	35.15 + .03	21.94 .06	20.83 .13	64.36 − .08	31.06 .25	56.36 .10
July 8.4	15.98 +1.78	27.44 − .06	35.16 − .02	21.97 + .02	20.94 + .08	64.22 − .20	31.25 + .13	56.45 + .06
18.4	17.95 2.12	27.36 .11	35.11 .07	21.97 − .03	20.98 + .03	63.95 .32	31.31 .00	56.48 + .01
28.4	20.21 2.41	27.22 .16	35.03 .11	21.90 .08	20.99 − .01	63.59 .43	31.25 − .12	56.47 − .04
Aug. 7.4	22.78 2.67	27.03 .20	34.90 .15	21.81 .12	20.95 .05	63.10 .53	31.07 .23	56.40 .09
17.3	25.55 2.85	26.81 .23	34.72 .18	21.67 .16	20.88 .09	62.52 .62	30.78 .34	56.30 .13
27.3	28.48 +3.00	26.56 − .26	34.53 − .21	21.50 − .18	20.77 − .13	61.85 − .69	30.38 − .44	56.15 − .16
Sept. 6.3	31.53 3.09	26.28 .28	34.30 .23	21.32 .20	20.62 .16	61.14 .75	29.90 .52	55.97 .19
16.2	34.64 3.10	25.99 .30	34.06 .24	21.11 .21	20.44 .18	60.35 .79	29.35 .56	55.76 .21
26.2	37.73 3.06	25.69 .29	33.81 .25	20.90 .21	20.26 .17	59.56 .80	28.78 .57	55.55 .22
Oct. 6.2	40.76 2.99	25.41 .27	33.57 .24	20.68 .21	20.09 .16	58.75 .79	28.20 .58	55.32 .22
16.2	43.70 +2.89	25.16 − .24	33.33 − .23	20.48 − .20	19.93 − .15	57.97 − .76	27.63 − .56	55.10 − .21

Mean Solar Date.	ι Lyræ.	25 Camelop. S. P.	θ Lyræ.	β Cygni.	β Sagittæ.	δ Cygni.	Groombr. 1374,S.P.	ε Pavonis.
	54° 4′	352° 37′	52° 4′	62° 16′	72° 46′	45° 8′	344° 12′	163° 12′
	h m 19 3	h m 19 8	h m 19 12	h m 19 26	h m 19 36	h m 19 41	h m 19 47	h m 19 48
	s	s	s	s	s	s	s	s
May 29.6	28.53 + .24	14.97 − .61	38.69 + .25	23.41 + .26	13.30 + .27	37.48 + .30	13.88 − .34	10.24 + .79
June 8.6	28.75 .20	14.52 .31	38.92 .21	23.64 .22	13.55 .23	37.75 .25	13.60 .22	11.00 .70
18.6	28.92 .16	14.35 − .02	39.11 .17	23.85 .18	13.76 .19	37.98 .20	13.44 − .10	11.66 .61
28.5	29.06 .11	14.48 + .26	39.25 .12	24.01 .14	13.94 .15	38.15 .15	13.41 + .03	12.22 .50
July 8.5	29.15 .06	14.87 .53	39.35 .07	24.12 .10	14.07 .11	38.28 .10	13.52 .17	12.66 .37
18.5	29.18 + .01	15.55 + .82	39.39 + .02	24.20 + .05	14.17 + .07	38.35 + .05	13.76 + .30	12.97 + .24
28.5	29.17 − .04	16.51 1.07	39.39 − .03	24.22 .00	14.21 + .02	38.35 − .02	14.11 .42	13.13 + .09
Aug. 7.4	29.10 .09	17.69 1.29	39.33 .08	24.21 − .05	14.22 − .02	38.30 .07	14.61 .53	13.14 − .06
17.4	29.00 .13	19.09 1.50	39.22 .13	24.14 .08	14.17 .06	38.21 .12	15.18 .63	13.02 .19
27.4	28.85 .17	20.69 1.69	39.08 .17	24.03 .12	14.09 .09	38.07 .17	15.86 .72	12.77 .31
Sept. 6.3	28.66 − .20	22.47 +1.84	38.88 − .21	23.89 − .16	13.99 − .12	37.86 − .21	16.65 + .81	12.41 − .43
16.3	28.45 .22	24.37 1.95	38.66 .23	23.71 .18	13.84 .15	37.64 .24	17.50 .88	11.92 .52
26.3	28.21 .23	26.37 2.03	38.43 .24	23.52 .20	13.67 .17	37.39 .26	18.42 .94	11.36 .58
Oct. 6.3	27.98 .24	28.44 2.09	38.18 .25	23.31 .21	13.50 .18	37.11 .27	19.39 .98	10.76 .62
16.2	27.74 .23	30.55 2.08	37.94 .24	23.11 .20	13.31 .17	36.84 .28	20.39 1.00	10.13 .64
26.2	27.51 − .21	32.59 +2.04	37.70 − .23	22.91 − .18	13.15 − .16	36.56 − .28	21.39 +1.01	9.49 − .63
Nov. 5.2	27.31 − .19	34.63 +2.00	37.48 − .21	22.74 − .16	12.99 − .15	36.28 − .27	22.41 +1.02	8.88 − .59

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Sagittæ.	c Sagittarii.	θ Aquilæ.	31 Cygni.	α Delphini.	β Pavonis.	ψ Capricor.	ε Cygni.
	70° 48′	118° 1′	91° 8′	43° 35′	74° 28′	156° 35′	115° 40′	56° 26′
	h m 19 53	h m 19 56	h m 20 5	h m 20 10	h m 20 34	h m 20 35	h m 20 39	h m 20 41
	s	s	s	s	s	s	s	s
June 18.6	59.05 + .21	3.32 + .26	45.78 + .23	15.70 + .24	38.95 + .23	17.84 + .57	44.13 + .29	52.09 + .27
28.6	59.24 .17	3.57 .22	45.99 .19	15.92 .19	39.17 20	18.36 .48	44.40 .25	52.33 .22
July 8.6	59.39 .13	3.76 .18	46.17 .15	16.08 .14	39.36 17	18.79 .39	44.64 .21	52.53 .17
18.5	59.51 .09	3.92 .13	46.30 .11	16.19 .08	39.52 13	19.13 .30	44.83 .17	52.68 .12
28.5	59.56 + .05	4.03 .08	46.40 .07	16.22 + .02	39.62 .08	19.38 .20	44.98 .12	52.78 .07
Aug. 7.5	59.59 .00	4.08 + .03	46.44 + .03	16.22 − .04	39.68 + .04	19.53 + .09	45.08 + .07	52.82 + .02
17.4	59.56 − .05	4 08 − .02	46.45 − .02	16.15 .10	39.71 .00	19.56 − .02	45.12 + .02	52.83 − .02
27.4	59.49 .09	4.03 .06	46.40 .06	16.03 .15	39.68 − .04	19.50 .12	45.12 − .02	52.78 .06
Sept. 6.4	59.39 .12	3.95 .10	46.33 .09	15.85 .20	39.61 .08	19.32 .22	45.07 .06	52.70 .10
16.4	59.26 .15	3.83 .13	46.22 .12	15.64 .23	39.51 .11	19.06 .29	44.99 .09	52.57 .14
26.3	59.10 − .17	3.68 − .15	46.09 − .13	15.39 − .25	39.38 − .14	18.74 − .36	44.87 − .12	52.40 − .17
Oct. 6.3	58.92 .18	3.52 .17	45.95 .14	15.13 .27	39.23 .15	18.34 .41	44.73 .15	52.22 .19
16.3	58.74 .18	3.33 .17	45.80 .15	14.85 .28	39.07 .16	17.92 .44	44.57 .16	52.02 .20
26.2	58.56 .17	3.17 .16	45.64 .15	14.57 .28	38.91 .16	17.47 .45	44.41 .16	51.82 .20
Nov. 5.2	58.40 .15	3.01 .14	45.49 .13	14.29 .27	38.76 .15	17.03 .42	44.25 .15	51.62 .20
15.2	58.26 − .13	2.88 − .12	45.37 − .11	14.03 − .25	38.62 − .14	16.63 − .39	44.11 − .14	51.42 − .18
25.2	58.15 − .10	2.77 − .10	45.28 − .08	13.80 − .22	38.48 − .12	16.26 − .35	43.98 − .12	51.25 − .16

Mean Solar Date.	τ Cygni.	ζ Capricor.	74 Cygni.	λ¹ Octantis.	ζ Chamæleontis, S.P.	π² Cygni.	16 Pegasi.	π Pegasi.
	52° 25′	112° 53′	50° 4′	173° 13′	189° 33′	41° 11′	64° 35′	57° 21′
	h m 21 10	h m 21 20	h m 21 32	h m 21 34	h m 21 36	h m 21 42	h m 21 48	h m 22 5
	s	s	s	s	s	s	s	s
July 8.6	30.76 + .21	32.47 + .26	39.06 + .23	32.67 +1.41	54.36 − .86	50.07 + .26	10.67 + .23	13.16 + .26
18.6	30.94 .16	32.70 .21	39.27 .18	33.96 1.16	53.61 .66	50.31 .21	10.89 .19	13.40 .21
28.5	31.07 .11	32.88 .16	39.42 .13	34.99 87	53.03 .46	50.48 .15	11.05 .15	13.58 .17
Aug. 7.5	31.17 .06	33.02 .11	39.53 .08	35.70 .55	52.69 .24	50.61 .09	11.19 .11	13.74 .12
17.5	31.19 + .01	33.11 .06	39.59 + .03	36.08 + .21	52.54 − .04	50.66 + .03	11.28 .07	13.84 .07
27.5	31.17 − .04	33.14 + .01	39.60 − .02	36.13 − .13	52.61 + .21	50.67 − .02	11.32 + .02	13.90 + .03
Sept. 6.4	31.10 .09	33.13 − .03	39.55 .07	35.83 .47	52.96 .44	50.62 .08	11.31 − .03	13.90 − .02
16.4	30.99 .13	33.08 .07	39.46 .11	35.19 .79	53.49 .64	50.52 .13	11.26 .07	13.87 .06
26.4	30.84 .16	32.99 .10	39.34 .15	34.26 1.06	54.23 .85	50.35 .18	11.18 .10	13.79 .10
Oct. 6.4	30.66 .19	32.88 .12	39.16 .18	33.07 1.30	55.19 1.04	50.15 .21	11.07 .12	13.69 .13
16.3	30.46 − .20	32.75 − .14	38.98 − .20	31.66 −1.48	56.31 +1.18	49.94 − .23	10.94 − .14	13.55 − .15
26.3	30.26 .21	32.60 .15	38.77 .21	30.11 1.60	57.55 1.27	49.70 .25	10.79 .15	13.40 .17
Nov. 5.3	30.05 .21	32.45 .15	38.57 .21	28.46 1.66	58.86 1.33	49.44 .26	10.63 .16	13.23 .17
15.2	29.84 .20	32.31 .14	38.35 .21	26.79 1.65	60.22 1.35	49.17 .26	10.47 .15	13.06 .17
25.2	29.65 .18	32.18 .12	38.16 .20	25.16 1.57	61.57 1.31	48.92 .25	10.32 .14	12.88 .16
Dec. 5.2	29.48 − .16	32.07 − .10	37.96 − .18	23.66 −1.41	62.84 +1.25	48.67 − .23	10.19 − .12	12.73 − .15

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ν Octantis.	γ Aquarii.	σ Aquarii.	α Lacertæ.	10 Lacertæ.	β Octantis.	λ Pegasi.	Groombr. 1706, S. P.
	176° 31′	91° 56′	101° 14′	40° 16′	51° 31′	171° 57′	67° 0′	348° 21′
	h m 22 10	h m 22 16	h m 22 24	h m 22 26	h m 22 34	h m 22 35	h m 22 41	h m 22 51
	s	s	s	s	s	s	s	s
July 8.6	76.52 +3.02	6.52 + .28	57.78 + .28	52.13 + .32	26.47 + .29	9.97 +1.43	21.29 + .30	18.00 − .62
18.6	79.33 2.57	6.77 .23	58.04 .24	52.42 .27	26.74 .25	11.32 1.28	21.55 .25	17.45 .49
28.6	81.66 2.06	6.98 .18	58.26 .20	52.67 .22	26.97 .21	12.52 1.08	21.79 .20	17.03 .36
Aug. 7.5	83.44 1.49	7.13 .14	58.44 .16	52.85 .16	27.15 .17	13.47 .82	21.96 .16	16.74 .23
17.5	84.63 .87	7.27 .10	58.58 .12	52.98 .10	27.30 .12	14.17 .56	22.11 .12	16.57 − .09
27.5	85.17 + .20	7.36 + .06	58.68 + .08	53.05 + .04	27.39 + .06	14.59 + .28	22.21 + .08	16.56 + .05
Sept. 6.5	85.04 − .46	7.38 + .02	58.73 + .04	53.07 − .02	27.41 + .01	14.74 − .01	22.27 + .04	16.68 .17
16.4	84.25 1.09	7.39 − .01	58.75 .00	53.02 .07	27.41 − .03	14.58 .30	22.29 .00	17.00 .37
26.4	82.86 1.69	7.36 .05	58.73 − .04	52.93 .11	27.35 .07	14.14 .55	22.26 − .04	17.46 .54
Oct. 6.4	80.87 2.24	7.29 .08	58.66 .07	52.80 .15	27.26 .10	13.45 .81	22.20 .07	18.07 .68
16.4	78.37 −2.69	7.21 − .10	58.59 − .09	52.62 − .19	27.14 − .13	12.53 −1.02	22.11 − .09	18.82 + .82
26.3	75.49 3.03	7.10 .11	58.48 .11	52.42 .22	27.00 .16	11.41 1.17	22.01 .11	19.72 .96
Nov. 5.3	72.30 3.27	6.98 .12	58.37 .11	52.19 .24	26.82 .18	10.14 1.32	21.88 .12	20.73 1.06
15.3	68.96 3.35	6.86 .12	58.25 .12	51.94 .25	26 64 .18	8.77 1.39	21.76 .13	21.84 1.16
25.2	65.59 3.32	6.75 .11	58.13 .12	51.70 .25	26.46 .18	7.35 1.40	21.62 .14	23.07 1.24
Dec. 5.2	62.32 −3.15	6.64 − .10	58.02 − .11	51.45 − .24	26.27 − .18	5.97 −1.36	21.48 − .13	24.32 +1.26
15.2	59.29 −2.90	6.54 − .08	57.91 − .10	51.21 − .23	26.09 − .17	4.64 −1.30	21.36 − .12	25.59 +1.27

Mean Solar Date.	o Androm.	φ Aquarii.	τ Pegasi.	λ Androm.	i^1 Aquarii.	δ Sculptoris.	γ^1 Octantis.	33 Piscium.
	48° 15′	96° 38′	66° 51′	44° 8′	108° 53′	118° 44′	172° 37′	96° 19′
	h m 22 56	h m 23 8	h m 23 15	h m 23 32	h m 23 38	h m 23 43	h m 23 45	h m 23 59
	s	s	s	s	s	s	s	s
July 28.6	59.09 + .24	45.96 + .25	19.42 + .23	18.59 + .30	38.22 + .27	20.38 + .29	55.79 +1.47	50.39 + .28
Aug. 7.6	59.31 .19	46.18 .20	19.63 .19	18.86 .25	38.48 .23	20.65 .25	57.15 1.27	50.64 .24
17.6	59.48 .14	46.35 .15	19.81 .15	19.09 .19	38.69 .19	20.88 .21	58.33 1.04	50.87 .20
27.6	59.60 .09	46.49 .11	19.94 .11	19.25 .14	38.86 .15	21.06 .17	59.23 .76	51.04 .16
Sept. 6.5	59.66 + .04	46.58 .07	20.04 .07	19.37 .09	38.99 .11	21.21 .13	59.86 .47	51.18 .12
16.5	59.68 .00	46.63 + .03	20 08 + .03	19.43 + .05	39.08 + .07	21.31 + .08	60.17 + .17	51.29 + .08
26.5	59.66 − .05	46.65 .00	20.11 − .01	19.46 + .01	39.12 + .03	21.35 + .03	60.20 − .15	51.36 .05
Oct. 6.4	59.58 .09	46.64 − .03	20.08 .04	19.44 − .04	39.13 − .01	21.37 − .01	59.88 .46	51.39 + .02
16.4	59.48 .12	46.59 .06	20.03 .07	19.36 .08	39.11 .04	21.34 .05	59.28 .74	51.40 − .02
26.4	59.35 .15	46.51 .08	19.94 .09	19.27 .11	39.05 .07	21.27 .08	58.39 1.01	51.36 .05
Nov. 5.4	59.19 − .17	46.42 − .09	19.84 − .11	19.13 − .14	38.97 − .09	21.18 − .10	57.26 −1.23	51.30 − .07
15.3	59.01 .18	46.32 .10	19.72 .12	18.98 .17	38.88 .10	21.08 .11	55.92 1.40	51.23 .08
25.3	58.82 .19	46.22 .11	19.61 .12	18.78 .19	38.77 .11	20.96 .12	54.46 1.50	51.15 .09
Dec. 5.3	58.63 .19	46.11 .11	19.48 .13	18.59 .20	38.66 .11	20.83 .13	52.91 1.57	51.06 .10
15.3	58.44 .18	46.00 .10	19.36 .12	18.39 .21	38.55 .11	20.70 .13	51.32 1.58	50.95 .11
25.2	58.27 − .18	45.91 − .08	19.23 − .12	18.18 − .20	38.43 − .11	20.57 − .12	49.75 −1.51	50.85 − .10
35.2	58.09 − .17	45.84 − .06	19.12 − .10	17.98 − .19	38.33 − .10	20.45 − .11	48.29 −1.40	50.75 − .09

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Jan. 0	18 42 36.20	36.80	−23 5 36.4	35.9	11.056	+11.25	+ 3 15.40	16 18.37	1 11.12	18 39 20.87
1	18 47 1.39	2.08	23 0 52.6	51.9	11.043	12.41	3 44.04	16 18.37	1 11.08	18 43 17.42
2	18 51 26.25	27.03	22 55 41.1	40.2	11.028	13.55	4 12.35	16 18.37	1 11.03	18 47 13.98
3	18 55 50.74	51.60	22 50 2.3	1.2	11.012	14.68	4 40.28	16 18.37	1 10.98	18 51 10.54
4	19 0 14.83	15.77	22 43 56.2	54.9	10.995	15.81	5 7.82	16 18.36	1 10.93	18 55 7.10
5	19 4 38.48	39.50	−22 37 23.0	21.5	10.976	+16.94	+ 5 34.92	16 18.35	1 10.88	18 59 3.66
6	19 9 1.67	2.77	22 30 23.0	21.3	10.956	18.06	6 1.56	16 18.34	1 10.81	19 3 0.22
7	19 13 24.37	25.55	22 22 56.3	54.4	10.935	19.16	6 27.71	16 18.32	1 10.75	19 6 56.77
8	19 17 46.56	47.81	22 15 3.3	1.1	10.913	20.25	6 53.34	16 18.30	1 10.68	19 10 53.33
9	19 22 8.20	9.52	22 6 44.1	41.6	10.891	21.34	7 18.42	16 18.27	1 10.61	19 14 49.89
10	19 26 29.27	30.66	−21 57 59.0	56.1	10.867	+22.41	+ 7 42.94	16 18.23	1 10.53	19 18 46.45
11	19 30 49.76	51.22	21 48 48.2	45.0	10.842	23.47	8 6.87	16 18.19	1 10.45	19 22 43.01
12	19 35 9.64	11.17	21 39 12.0	8.5	10.816	24.52	8 30.20	16 18.14	1 10.37	19 26 39.57
13	19 39 28.90	30.49	21 29 10.7	6.9	10.789	25.57	8 52.91	16 18.09	1 10.29	19 30 36.12
14	19 43 47.52	49.17	21 18 44.6	40.5	10.762	26.61	9 14.97	16 18.03	1 10.20	19 34 32.68
15	19 48 5.48	7.19	−21 7 54.0	49.6	10.734	+27.62	+ 9 36.37	16 17.97	1 10.11	19 38 29.24
16	19 52 22.76	24.53	20 56 39.2	34.5	10.706	28.62	9 57.10	16 17.89	1 10.01	19 42 25.80
17	19 56 39.36	41.19	20 44 60.4	55.4	10 677	29.61	10 17.15	16 17.81	1 9.92	19 46 22.35
18	20 0 55.27	57.15	20 32 58.0	52.6	10.648	30.59	10 36.50	16 17.72	1 9.82	19 50 18.91
19	20 5 10.48	12.41	20 20 32.2	26.5	10.619	31.55	10 55.15	16 17.63	1 9.72	19 54 15.47
20	20 9 24.96	26.94	−20 7 43.5	37.4	10.589	+32.50	+11 13.07	16 17.54	1 9.62	19 58 12.03
21	20 13 38.71	40.73	19 54 32.1	25.7	10.558	33.44	11 30.25	16 17.44	1 9.51	20 2 8.59
22	20 17 51.71	53.78	19 40 58.4	51.7	10.527	34.36	11 46.69	16 17.33	1 9.40	20 6 5.15
23	20 22 3.96	6.07	19 26 62.8	55.8	10.495	35.27	12 2.38	16 17.22	1 9.29	20 10 1.70
24	20 26 15.44	17.59	19 12 45.5	38.2	10.463	36.16	12 17.30	16 17.10	1 9.18	20 13 58.26
25	20 30 26.14	28.32	−18 57 67.0	59.4	10.430	+37.04	+12 31.45	16 16.98	1 9.07	20 17 54.81
26	20 34 36.06	38.27	18 42 67.7	59.7	10.396	37.90	12 44.81	16 16.86	1 8.96	20 21 51.37
27	20 38 45.18	47.42	18 27 47.9	39.5	10.363	38.74	12 57.37	16 16.73	1 8.85	20 25 47.93
28	20 42 53.50	55.76	18 11 67.9	59.3	10.330	39.57	13 9.12	16 16.60	1 8.74	20 29 44.49
29	20 47 1.00	3.28	17 55 68.3	59.4	10.296	40.38	13 20.05	16 16.47	1 8.62	20 33 41.04
30	20 51 7.68	9.98	−17 39 49.5	40.2	10.262	+41.18	+13 30.16	16 16.33	1 8.51	20 37 37.60
31	20 55 13.53	15.85	17 23 11.8	2.2	10.227	41.95	13 39.45	16 16.19	1 8.40	20 41 34.16
Feb. 1	20 59 18.54	20.88	17 6 15.6	5.7	10.192	42.71	13 47.90	16 16.05	1 8.29	20 45 30.72
2	21 3 22.72	25.07	16 48 61.5	51.3	10.157	43.45	13 55.52	16 15.91	1 8.17	20 49 27.27
3	21 7 26.06	28.42	16 31 29.8	19.4	10.122	44.17	14 2.30	16 15.76	1 8.06	20 53 23.83
4	21 11 28.56	30.93	−16 13 41.0	30.4	10.087	+44.87	+14 8.24	16 15.61	1 7.94	20 57 20.38
5	21 15 30.23	32.61	15 55 35.4	24.6	10.052	45.56	14 13.34	16 15.46	1 7.83	21 1 16.94
6	21 19 31.08	33.46	15 37 13.5	2.5	10.018	46.24	14 17.62	16 15.30	1 7.71	21 5 13.49
7	21 23 31.09	33.48	15 18 35.7	24.5	9.984	46.90	14 21.07	16 15.13	1 7.60	21 9 10.05
8	21 27 30.28	32.67	14 59 42.5	31.1	9.950	47 53	14 23.70	16 14.96	1 7.48	21 13 6.60
9	21 31 28.66	31.05	−14 40 34.2	22.6	9.917	+48.15	+14 25.52	16 14.79	1 7.37	21 17 3.16
10	21 35 26.25	28.63	14 20 71.2	59.5	9.884	48.76	14 26.54	16 14.61	1 7.26	21 20 59.72
11	21 39 23.05	25.42	14 1 34.0	22.2	9.851	49.34	14 26.78	16 14.43	1 7.15	21 24 56.27
12	21 43 19.08	21.44	13 41 43.1	31.1	9.819	49.91	14 26.25	16 14.24	1 7.04	21 28 52.82
13	21 47 14.35	16.70	13 21 38.8	26.7	9.788	50.46	14 24.96	16 14.05	1 6.93	21 32 49.38
14	21 51 8.87	11.21	−13 1 21.4	9.2	9.757	+50.99	+14 22.92	16 13.85	1 6.82	21 36 45.93
15	21 55 2.67	4.99	−12 40 51.3	39.0	9.727	+51.51	+14 20.15	16 13.65	1 6.71	21 40 42.49

Note. —For mean time interval of semidiameter passing meridian, subtract $0^s.19$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Feb. 15	21 55 2.67	4.99	−12 40 51.3	39.0	9.727	+51.51	+14 20.15	16 13.65	1 6.71	21 40 42.49
16	21 58 55.75	58.06	12 19 69.0	56.6	9.697	52.00	14 16.67	16 13.44	1 6.61	21 44 39.04
17	22 2 48.13	50.43	11 59 14.8	2.4	9.668	52.49	14 12.48	16 13.23	1 6.51	21 48 35.60
18	22 6 39.82	42.10	11 37 69.2	56.7	9.640	52.96	14 7.61	16 13.01	1 6.41	21 52 32.15
19	22 10 30.83	33.09	11 16 52.5	40.0	9.612	53.41	14 2.07	16 12.79	1 6.31	21 56 28.71
20	22 14 21.19	23.42	−10 55 25.1	12.6	9.585	+53.85	+13 55.88	16 12.57	1 6.21	22 0 25.26
21	22 18 10.92	13.12	10 33 47.5	35.0	9.558	54.27	13 49.05	16 12.34	1 6.11	22 4 21.82
22	22 22 0.02	2.20	10 11 60.0	47.5	9.533	54.67	13 41.59	16 12.11	1 6.02	22 8 18.37
23	22 25 48.51	50.66	9 49 63.0	50.5	9.508	55.06	13 33.52	16 11.88	1 5.93	22 12 14.93
24	22 29 36.39	38.51	9 27 56.9	44.5	9.483	55.43	13 24.84	16 11.65	1 5.84	22 16 11.48
25	22 33 23.69	25.78	− 9 5 42.3	30.0	9.459	+55.77	+13 15.57	16 11.42	1 5.75	22 20 8.04
26	22 37 10.41	12.47	8 43 19.5	7.3	9.435	56.11	13 5.73	16 11.18	1 5.67	22 24 4.59
27	22 40 56.57	58.60	8 20 48.8	36.7	9.412	56.42	12 55.33	16 10.94	1 5.59	22 28 1.15
28	22 44 42.19	44.18	7 57 70.8	58.8	9.389	56.72	12 44.38	16 10.70	1 5.51	22 31 57.70
29	22 48 27.27	29.23	7 35 25.8	14.0	9.368	57.00	12 32.91	16 10.46	1 5.43	22 35 54.26
Mar. 1	22 52 11.84	13.76	− 7 12 34.4	22.7	9.347	+57.26	+12 20.92	16 10.22	1 5.36	22 39 50.81
2	22 55 55.90	57.79	6 49 36.9	25.3	9.326	57.51	12 8.44	16 9.98	1 5.30	22 43 47.36
3	22 59 39.47	41.32	6 26 33.6	22.1	9.306	57.73	11 55.47	16 9.74	1 5.24	22 47 43.91
4	23 3 22.58	24.39	6 3 25.1	13.7	9.287	57.94	11 42.02	16 9.50	1 5.17	22 51 40.47
5	23 7 5.24	7.01	5 40 11.8	0.6	9.268	58.14	11 28.10	16 9.25	1 5.11	22 55 37.02
6	23 10 47.46	49.19	− 5 16 54.1	43.1	9.250	+58.31	+11 13.76	16 9.00	1 5.05	22 59 33.58
7	23 14 29.27	30.96	4 53 32.3	21.5	9.234	58.47	10 59.02	16 8.75	1 4.99	23 3 30.13
8	23 18 10.68	12.33	4 29 66.7	56.2	9.218	58.62	10 43.89	16 8.49	1 4.93	23 7 26.68
9	23 21 51.72	53.33	4 6 37.9	27.6	9.203	58.76	10 28.39	16 8.23	1 4.88	23 11 23.23
10	23 25 32.41	33.98	3 42 66.1	56.1	9.189	58.87	10 12.52	16 7.97	1 4.83	23 15 19.79
11	23 29 12.78	14.31	− 3 19 31.8	22.0	9.176	+58.98	+ 9 56.33	16 7.71	1 4.79	23 19 16.34
12	23 32 52.85	54.34	2 55 55.3	45.7	9.164	59.06	9 39.84	16 7.45	1 4.75	23 23 12.90
13	23 36 32.64	34.08	2 32 16.9	7.6	9.153	59.13	9 23.08	16 7.18	1 4.71	23 27 9.45
14	23 40 12.18	13.57	2 8 37.0	28.0	9.143	59.19	9 6.07	16 6.91	1 4.67	23 31 6.00
15	23 43 51.48	52.83	1 44 55.9	47.2	9.134	59.23	8 48.82	16 6.64	1 4.64	23 35 2.55
16	23 47 30.58	31.88	− 1 21 13.9	5.5	9.126	+59.25	+ 8 31.37	16 6.37	1 4.61	23 38 59.11
17	23 51 9.49	10.74	0 57 31.4	23.3	9.119	59.27	8 13.73	16 6.09	1 4.59	23 42 55.66
18	23 54 48.24	49.45	0 33 48.8	41.0	9.113	59.27	7 55.94	16 5.82	1 4.57	23 46 52.22
19	23 58 26.87	28.03	− 0 9 66.4	58.9	9.107	59.25	7 38.00	16 5.54	1 4.55	23 50 48.77
20	0 2 5.38	6.49	+ 0 13 35.5	42.7	9.102	59.22	7 19.95	16 5.26	1 4.53	23 54 45.33
21	0 5 43.78	44.85	+ 0 37 16.6	23.5	9.098	+59.18	+ 7 1.81	16 4.98	1 4.51	23 58 41.88
22	0 9 22.11	23.13	1 0 56.4	63.0	9.095	59.12	6 43.59	16 4.70	1 4.50	0 2 38.43
23	0 13 0.39	1.36	1 24 34.5	40.8	9.094	59.04	6 25.32	16 4.41	1 4.49	0 6 34.98
24	0 16 38.63	39.55	1 48 10.7	16.7	9.093	58.96	6 7.01	16 4.13	1 4.48	0 10 31.54
25	0 20 16.85	17.73	2 11 44.6	50.3	9.092	58.85	5 48.68	16 3.85	1 4.47	0 14 28.09
26	0 23 55.06	55.89	+ 2 35 15.8	21.2	9.092	+58.73	+ 5 30.34	16 3.57	1 4.47	0 18 24.64
27	0 27 33.29	34.08	2 58 43.9	49.0	9.093	58.60	5 12.02	16 3.29	1 4.47	0 22 21.19
28	0 31 11.56	12.30	3 22 8.5	13.2	9.095	58.45	4 53.74	16 3.01	1 4.47	0 26 17.75
29	0 34 49.87	50.57	3 45 29.2	33.6	9.098	58.28	4 35.50	16 2.73	1 4.48	0 30 14.30
30	0 38 28.24	28.90	4 8 45.7	49.8	9.101	58.10	4 17.32	16 2.45	1 4.49	0 34 10.86
31	0 42 6.69	7.30	+ 4 31 57.7	61.5	9.104	+57.90	+ 3 59.22	16 2.18	1 4.50	0 38 7.41
32	0 45 45.23	45.79	+ 4 55 4.7	8.2	9.108	+57.68	+ 3 41.22	16 1.90	1 4.52	0 42 3.97

NOTE.—For mean time interval of semidiameter passing meridian, subtract $0^s.18$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Apr. 1	0 45 45.23	45.79	+ 4 55 4.7	8.2	9.108	+57.68	+3 41.22	16 1.90	1 4.52	0 42 3.97
2	0 49 23.89	24.40	5 18 6.3	9.5	9.113	57.45	3 23.33	16 1.63	1 4.54	0 46 0.52
3	0 53 2.68	3.14	5 41 2.2	5.1	9.119	57.20	3 5.57	16 1.37	1 4.56	0 49 57.07
4	0 56 41.61	42.03	6 3 52.0	54.6	9.125	56.94	2 47.95	16 1.10	1 4.60	0 53 53.62
5	1 0 20.71	21.09	6 26 35.4	37.8	9.133	56.66	2 30.50	16 0.83	1 4.63	0 57 50.18
6	1 4 0.00	0.33	+ 6 49 12.0	14.2	9.141	+56.37	+2 13.23	16 0.56	1 4.66	1 1 46.73
7	1 7 39 48	39.77	7 11 41.6	43.5	9.150	56.07	1 56.17	16 0.29	1 4.69	1 5 43.29
8	1 11 19.18	19.43	7 34 3.7	5.3	9.159	55.76	1 39.33	16 0.02	1 4.73	1 9 39.84
9	1 14 59.14	59.35	7 56 18.1	19.4	9.170	55.43	1 22.73	15 59.75	1 4.77	1 13 36.40
10	1 18 39.36	39.53	8 18 24.4	25.4	9.181	55.09	1 6.40	15 59.48	1 4.81	1 17 32.95
11	1 22 19.86	19.99	+ 8 40 22.3	23.1	9.194	+54.74	+0 50.35	15 59.21	1 4.85	1 21 29.50
12	1 26 0.65	0.74	9 2 11.5	12.1	9.207	54.37	0 34.61	15 58.94	1 4.90	1 25 26.05
13	1 29 41.77	41.82	9 23 51.8	52.1	9.221	53.98	0 19.17	15 58.67	1 4.95	1 29 22.61
14	1 33 23.24	23.25	9 45 22.8	22.9	9.235	53.58	+0 4.08	15 58.40	1 5.00	1 33 19.16
15	1 37 5.07	5.04	10 6 44.1	44.0	9.250	53.18	−0 10.65	15 58.13	1 5.05	1 37 15.72
16	1 40 47.27	47.20	+10 27 55.5	55.2	9.267	+52.76	−0 25.00	15 57.86	1 5.11	1 41 12.27
17	1 44 29.87	29.76	10 48 56.7	56.2	9.284	52.33	0 38.95	15 57.59	1 5.16	1 45 8.83
18	1 48 12.89	12.74	11 9 47.3	46.7	9.301	51.88	0 52.49	15 57.32	1 5.22	1 49 5.38
19	1 51 56.33	56.15	11 30 27.1	26.3	9.319	51.42	1 5.60	15 57.05	1 5.28	1 53 1.94
20	1 55 40.21	40.00	11 50 55.7	54.7	9.338	50.95	1 18.27	15 56.79	1 5.34	1 56 58.49
21	1 59 24.55	24.31	+12 11 12.7	11.5	9.357	+50.46	−1 30.48	15 56.52	1 5.40	2 0 55.05
22	2 3 9.35	9.08	12 31 17.8	16.4	9.377	49.96	1 42.23	15 56.26	1 5.47	2 4 51.60
23	2 6 54.62	54.32	12 51 10.7	9.2	9.397	49.44	1 53.52	15 56.00	1 5.54	2 8 48.16
24	2 10 40.38	40.05	13 10 51.0	49.4	9.417	48.90	2 4.32	15 55.75	1 5.61	2 12 44.71
25	2 14 26.63	26.28	13 30 18.4	16.7	9.437	48.36	2 14.62	15 55.50	1 5.68	2 16 41.27
26	2 18 13.38	13.01	+13 49 32.5	30.7	9.458	+47.80	−2 24.42	15 55.25	1 5.75	2 20 37.82
27	2 22 0.63	0.24	14 8 33.0	31.1	9.479	47.22	2 33.72	15 55.01	1 5.83	2 24 34.38
28	2 25 48.39	47.97	14 27 19.6	17.6	9.501	46.63	2 42.52	15 54.77	1 5.91	2 28 30.93
29	2 29 36.67	36.22	14 45 51.8	49.7	9.523	46 03	2 50.80	15 54.53	1 5.98	2 32 27.49
30	2 33 25.47	25.00	15 4 9.3	7.1	9.545	45.42	2 58.56	15 54.29	1 6.06	2 36 24.04
May 1	2 37 14.79	14.30	+15 22 11.9	9.6	9.567	+44.78	−3 5.78	15 54.05	1 6.14	2 40 20.60
2	2 41 4.64	4.13	15 39 59.1	56.8	9.589	44.14	3 12.48	15 53.82	1 6.22	2 44 17.15
3	2 44 55.03	54.50	15 57 30.6	28.3	9.611	43.49	3 18.65	15 53.59	1 6.30	2 48 13.71
4	2 48 45.96	45.41	16 14 46.3	43.9	9.633	42.81	3 24.29	15 53.37	1 6.38	2 52 10.26
5	2 52 37.42	36.86	16 31 45.7	43.3	9.656	42.13	3 29.39	15 53.15	1 6.46	2 56 6.82
6	2 56 29.43	28.86	+16 48 28.5	26.1	9.679	+41.43	−3 33.94	15 52.93	1 6.54	3 0 3.37
7	3 0 22.00	21.42	17 4 54.4	52.0	9.702	40.72	3 37.93	15 52.72	1 6.62	3 3 59.93
8	3 4 15.12	14.53	17 21 3.2	0.7	9.725	40.00	3 41.36	15 52.51	1 6.71	3 7 56.49
9	3 8 8.80	8.20	17 36 54.5	52.0	9.748	39.27	3 44.24	15 52.30	1 6.79	3 11 53.05
10	3 12 3.05	2.44	17 52 28.2	25.7	9.772	38.53	3 46.55	15 52.09	1 6.87	3 15 49.60
11	3 15 57.87	57.26	+18 7 44.0	41.5	9.796	+37.78	−3 48.29	15 51.88	1 6.95	3 19 46.16
12	3 19 53.27	52.65	18 22 41.6	39.1	9.820	37.01	3 49.45	15 51.67	1 7.04	3 23 42.71
13	3 23 49.24	48.61	18 37 20.6	18.2	9.845	36.23	3 50.03	15 51.46	1 7.12	3 27 39.27
14	3 27 45.79	45.16	18 51 40.8	38.5	9.869	35.45	3 50.03	15 51.26	1 7.20	3 31 35.83
15	3 31 42.93	42.30	19 5 42.0	39.8	9.893	34.65	3 49.45	15 51.06	1 7.28	3 35 32.39
16	3 35 40.65	40.02	+19 19 24.1	21.9	9.917	+33.84	−3 48.29	15 50.86	1 7.36	3 39 28.94
17	3 39 38.94	38.31	+19 32 46.6	44.4	9.941	+33.02	−3 46.55	15 50.66	1 7.44	3 43 25.50

Note.—For mean time interval of semidiameter passing meridian, subtract $0^{s}.18$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
May 17	3 39 38.94	38.31	+19 32 46.6	44.4	9.941	+33.02	−3 46.55	15 50.66	1 7.44	3 43 25.50
18	3 43 37.80	37.18	19 45 49.2	47.1	9.964	32.19	3 44.25	15 50.47	1 7.52	3 47 22.05
19	3 47 37.23	36.62	19 58 31.8	29.8	9 988	31.35	3 41.39	15 50.28	1 7.60	3 51 18.61
20	3 51 37.23	36.62	20 10 54.1	52.2	10.011	30.49	3 37.96	15 50.09	1 7.67	3 55 15.17
21	3 55 37.78	37.18	20 22 55.8	54.0	10.034	29.62	3 33.96	15 49.91	1 7.75	3 59 11.73
22	3 59 38.88	38.29	+20 34 36.6	34.9	10.057	+28.75	−3 29.41	15 49.73	1 7.82	4 3 8.28
23	4 3 40.51	39.93	20 45 56.4	54.8	10.079	27.87	3 24.34	15 49.55	1 7.89	4 7 4.84
24	4 7 42.66	42.10	20 56 54.8	53.3	10.100	26.98	3 18.75	15 49.39	1 7.96	4 11 1.40
25	4 11 45.31	44.77	21 7 31.6	30.2	10.121	26.08	3 12.65	15 49.23	1 8.03	4 14 57.96
26	4 15 48.46	47.93	21 17 46.6	45.3	10.141	25.16	3 6.06	15 49.07	1 8.10	4 18 54.51
27	4 19 52.08	51.57	+21 27 39.5	38.3	10.160	+24.23	−2 59.00	15 48.92	1 8.17	4 22 51.07
28	4 23 56.15	55.66	21 37 10.0	8.9	10.179	23 30	2 51.48	15 48.77	1 8.23	4 26 47.63
29	4 28 0.66	0.19	21 46 18.0	17.0	10.197	22.36	2 43.53	15 48.63	1 8.29	4 30 44.19
30	4 32 5.60	5.15	21 55 3.3	2.4	10.214	21.41	2 35.15	15 48.49	1 8.35	4 34 40.75
31	4 36 10.94	10.52	22 3 25.7	24.8	10.230	20.44	2 26.37	15 48.35	1 8.41	4 38 37.31
June 1	4 40 16.67	16.28	+22 11 25.0	24.2	10.246	+19.48	−2 17.20	15 48.22	1 8.46	4 42 33.86
2	4 44 22.76	22.40	22 19 1.0	0.3	10.261	18.51	2 7.67	15 48.09	1 8.51	4 46 30.42
3	4 48 29.20	28.87	22 26 13.6	13.0	10.275	17.53	1 57.79	15 47.97	1 8.56	4 50 26.98
4	4 52 35.97	35.67	22 33 2.7	2.2	10.288	16.55	1 47.58	15 47.86	1 8.61	4 54 23.54
5	4 56 43.05	42.78	22 39 28.1	27.7	10.301	15.56	1 37.05	15 47.75	1 8.66	4 58 20.09
6	5 0 50.43	50.19	+22 45 29.6	29.3	10.313	+14.56	−1 26.23	15 47.64	1 8.70	5 2 16.65
7	5 4 58.09	57.88	22 51 7.2	6.9	10.324	13 56	1 15.13	15 47.53	1 8.74	5 6 13.21
8	5 9 6.01	5.83	22 56 20.7	20.4	10.335	12.56	1 3.77	15 47.43	1 8.78	5 10 9.77
9	5 13 14.17	14.03	23 1 10.0	9.8	10.345	11.55	0 52.17	15 47.33	1 8.82	5 14 6.33
10	5 17 22.57	22.46	23 5 35.0	34.9	10.354	10.54	0 40.33	15 47.23	1 8.85	5 18 2.89
11	5 21 31.18	31.11	+23 9 35.7	35.6	10.363	+ 9.53	−0 28.27	15 47.13	1 8.88	5 21 59.44
12	5 25 39.98	39.94	23 13 12.1	12.0	10.370	8.51	0 16.03	15 47.03	1 8.90	5 25 56.00
13	5 29 48.95	48.95	23 16 24.0	24.0	10.377	7.49	−0 3.61	15 46.94	1 8.92	5 29 52.56
14	5 33 58.08	58.12	23 19 11.3	11.3	10.383	6.46	+0 8.96	15 46.85	1 8.94	5 33 49.12
15	5 38 7.35	7.42	23 21 34.0	34.0	10.389	5.43	0 21.67	15 46.77	1 8.95	5 37 45.68
16	5 42 16.73	16.84	+23 23 32.1	32.1	10.393	+ 4.40	+0 34.49	15 46.69	1 8.96	5 41 42.24
17	5 46 26.21	26.35	23 25 5.5	5.5	10.396	3.37	0 47.41	15 46.62	1 8.97	5 45 38.80
18	5 50 35.75	35.92	23 26 14.1	14.1	10.398	2.34	1 0.40	15 46.56	1 8.97	5 49 35.36
19	5 54 45.34	45.55	23 26 57.9	57.9	10.400	1.31	1 13.44	15 46.49	1 8.97	5 53 31.91
20	5 58 54.96	55.21	23 27 16.9	16.9	10.400	+ 0.28	1 26.49	15 46.43	1 8.97	5 57 28.47
21	6 3 4.57	4.86	+23 27 11.1	11.1	10.400	− 0.76	+1 39.54	15 46.37	1 8.97	6 1 25.03
22	6 7 14.14	14.47	23 26 40.5	40.5	10.398	1.79	1 52.56	15 46.32	1 8.96	6 5 21.59
23	6 11 23.66	24.02	23 25 45.1	45.0	10.395	2.83	2 5.51	15 46.27	1 8.95	6 9 18.15
24	6 15 33.09	33.49	23 24 24.9	24.8	10.391	3.86	2 18.38	15 46.23	1 8.94	6 13 14.71
25	6 19 42.41	42.85	23 22 40.0	39.8	10.386	4.89	2 31.15	15 46.20	1 8.92	6 17 11.26
26	6 23 51.58	52.05	+23 20 30.3	30.1	10.379	− 5.92	+2 43.77	15 46.18	1 8.90	6 21 7.82
27	6 28 0.58	1.08	23 17 56.0	55.7	10.371	6.94	2 56.22	15 46.16	1 8.87	6 25 4.38
28	6 32 9.38	9.92	23 14 57.1	56.7	10.362	7.95	3 8.46	15 46.14	1 8.84	6 29 0.94
29	6 36 17.96	18.54	23 11 33.8	33.3	10 353	8.96	3 20.49	15 46.13	1 8.81	6 32 57.50
30	6 40 26.30	26.91	23 7 46.1	45.5	10.342	9.97	3 32.27	15 46.12	1 8.78	6 36 54.06
31	6 44 34.37	35.01	+23 3 34.1	33.4	10.331	−10.99	+3 43.78	15 46.12	1 8.74	6 40 50.62
32	6 48 42.13	42.81	+22 58 57.9	57.1	10.318	−12.00	+3 54.99	15 46.12	1 8.71	6 44 47.18

NOTE. - For mean time interval of semidiameter passing meridian, subtract 0s.19 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
July 1	6 44 34.37	35.01	+23 3 34.1	33.4	10.331	−10.99	+3 43.78	15 46.12	1 8.74	6 40 50.62
2	6 48 42.13	42.81	22 58 57.9	57.1	10.318	12.00	3 54.99	15 46.12	1 8.71	6 44 47.18
3	6 52 49.58	50.29	22 53 57 8	56.9	10.304	13.00	4 5.89	15 46.13	1 8.67	6 48 43.73
4	6 56 56.71	57.45	22 48 33.8	32.8	10.290	13 99	4 16.46	15 46.14	1 8.63	6 52 40.29
5	7 1 3.48	4.25	22 42 46.0	44.9	10.275	14.98	4 26.67	15 46.16	1 8.58	6 56 36.85
6	7 5 9.89	10.68	+22 36 34.5	33.3	10.259	−15.96	+4 36.52	15 46.18	1 8.53	7 0 33.41
7	7 9 15.92	16.73	22 29 59.6	58.3	10.242	16.94	4 45.99	15 46.20	1 8.48	7 4 29.97
8	7 13 21.55	22.38	22 23 1.4	0.0	10.225	17.91	4 55.06	15 46.22	1 8.32	7 8 26.53
9	7 17 26.76	27.62	22 15 40.1	38.6	10.208	18.86	5 3.72	15 46.25	1 8.36	7 12 23.08
10	7 21 31.55	32.45	22 7 55.9	54.3	10.190	19.81	5 11.95	15 46.29	1 8.30	7 16 19.64
11	7 25 35.90	36.80	+21 59 48.9	47.1	10.172	−20.76	+5 19.74	15 46.33	1 8.24	7 20 16.19
12	7 29 39.81	40.73	21 51 19.2	17.3	10.153	21.70	5 27.09	15 46.37	1 8.18	7 24 12.75
13	7 33 43.26	44.20	21 42 27.1	25.1	10.134	22.63	5 33.98	15 46.41	1 8.11	7 28 9.31
14	7 37 46.24	47.20	21 33 12.8	10.7	10.114	23.55	5 40.40	15 46.45	1 8.04	7 32 5.87
15	7 41 48.74	49.72	21 23 36.5	34.2	10.094	24.46	5 46.34	15 46.50	1 7.97	7 36 2.43
16	7 45 50.75	51.74	+21 13 38.3	35.9	10.074	−25.37	+5 51.79	15 46.55	1 7.90	7 39 58.99
17	7 49 52.26	53.26	21 3 18.5	16.0	10.052	26.27	5 56.74	15 46.61	1 7.82	7 43 55.55
18	7 53 53.25	54.26	20 52 37.2	34.6	10 030	27.16	6 1.17	15 46.67	1 7.75	7 47 52.11
19	7 57 53.72	54.74	20 41 34.7	32.0	10.008	28.04	6 5.07	15 46.74	1 7.67	7 51 48.66
20	8 1 53.65	54.68	20 30 11.3	8.4	9.985	28.90	6 8.44	15 46.82	1 7.58	7 55 45.22
21	8 5 53.03	54.06	+20 18 27.2	24.2	9.962	−29.76	+6 11.26	15 46.90	1 7.50	7 59 41.78
22	8 9 51.85	52.88	20 6 22.6	19.5	9.939	30.61	6 13.52	15 46.98	1 7.42	8 3 38.34
23	8 13 50.10	51.14	19 53 57.7	54.5	9.915	31.45	6 15.21	15 47.07	1 7.33	8 7 34.89
24	8 17 47.76	48.80	19 41 12.9	9.6	9.891	32.28	6 16.32	15 47.17	1 7.25	8 11 31.45
25	8 21 44.83	45.87	19 28 8.4	5.0	9.866	33.09	6 16.83	15 47.27	1 7.16	8 15 28.01
26	8 25 41.31	42.34	+19 14 44.6	41.1	9.841	−33.89	+6 16 75	15 47.37	1 7.08	8 19 24.57
27	8 29 37.18	38.21	19 0 61.6	58.0	9.815	34.67	6 16.06	15 47.49	1 6.99	8 23 21.12
28	8 33 32.44	33.47	18 46 59.8	56.1	9.789	35.45	6 14.76	15 47.61	1 6.91	8 27 17.68
29	8 37 27.08	28.10	18 32 39.5	35.6	9.763	36.22	6 12.84	15 47.73	1 6.82	8 31 14.23
30	8 41 21.09	22.10	18 17 60.9	57.0	9.737	36.98	6 10.30	15 47.85	1 6.74	8 35 10.35
31	8 45 14.47	15.47	+18 3 4.4	0.5	9.711	−37.72	+6 7.13	15 47.98	1 6.65	8 39 7.79
Aug. 1	8 49 7.24	8.22	17 47 50.2	46.4	9.685	38.44	6 3.33	15 48.11	1 6.57	8 43 3.91
2	8 52 59.39	60.36	17 32 18.8	15.0	9.659	39 16	5 58.91	15 48.25	1 6.48	8 47 0.46
3	8 56 50.92	51.88	17 16 30.3	26.5	9.634	39.87	5 53.88	15 48.39	1 6.39	8 50 57.02
4	9 0 41.83	42.77	17 0 25.1	21.2	9.609	40.56	5 48.24	15 48.53	1 6.30	8 54 53.57
5	9 4 32.13	33.05	+16 43 63.5	59.6	9.584	−41.23	+5 41.99	15 48.67	1 6.21	8 58 50.13
6	9 8 21.83	22.73	16 27 25.7	21.8	9.559	41.90	5 35.13	15 48.82	1 6.13	9 2 46.68
7	9 12 10.93	11.81	16 10 32.0	28.1	9.534	42.55	5 27.67	15 48.97	1 6.04	9 6 43.24
8	9 15 59.45	60.30	15 53 22.8	18.9	9.510	43.20	5 19.63	15 49.13	1 5.96	9 10 39.79
9	9 19 47.40	48.22	15 35 58.3	54.4	9.486	43.83	5 11.02	15 49.29	1 5.87	9 14 36.35
10	9 23 34.78	35.57	+15 18 18.8	15.0	9.463	−44.45	+5 1.84	15 49.45	1 5.79	9 18 32.91
11	9 27 21.60	22.36	15 0 24.6	20.9	9.440	45.06	4 52.11	15 49.62	1 5.71	9 22 29.47
12	9 31 7.88	8.61	14 42 16.0	12.4	9.417	45.66	4 41.83	15 49.79	1 5.63	9 26 26.02
13	9 34 53.63	54.33	14 23 53.2	49.7	9.395	46.25	4 31.02	15 49.96	1 5.55	9 30 22.58
14	9 38 38.86	39.53	14 5 16.5	13.1	9.374	46.82	4 19.69	15 50.13	1 5.47	9 34 19.13
15	9 42 23.57	24.21	+13 46 26.3	23.0	9.353	−47.37	+4 7.86	15 50.30	1 5.39	9 38 15.69
16	9 46 7.78	8.39	+13 27 22.9	19.8	9.332	−47.91	+3 55.52	15 50.48	1 5.32	9 42 12.24

NOTE.—For mean time interval of semidiameter passing meridian, subtract $0^{s}.19$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Aug. 16	9 46 7.78	8.39	+13 27 22.9	19.8	9.332	−47.91	+ 3 55.52	15 50.48	1 5.32	9 42 12.24
17	9 49 51.50	52.08	13 8 6.6	3.6	9.312	48.45	3 42.68	15 50.66	1 5.24	9 46 8.80
18	9 53 34.74	35.28	12 48 37.6	34.7	9.292	48.97	3 29.36	15 50.84	1 5.18	9 50 5.35
19	9 57 17.50	18.01	12 28 56.3	53.5	9.272	49.47	3 15.57	15 51.03	1 5.11	9 54 1.91
20	10 0 59.80	60.27	12 9 3.0	0.4	9.253	49.96	3 1.31	15 51.22	1 5.04	9 57 58.46
21	10 4 41.64	42.07	+11 48 58.1	55.7	9.234	−50.44	+ 2 46.59	15 51.42	1 4.97	10 1 55.02
22	10 8 23.03	23.42	11 28 41.9	39.7	9.216	50.91	2 31.43	15 51.62	1 4.91	10 5 51.57
23	10 12 3.99	4.34	11 8 14.7	12.7	9.198	51.36	2 15.84	15 51.83	1 4.84	10 9 48.13
24	10 15 44.53	44.84	10 47 36.8	35.0	9.180	51.79	1 59.82	15 52.04	1 4.78	10 13 44.68
25	10 19 24.65	24.92	10 26 48.7	47.1	9.163	52.21	1 43.39	15 52.26	1 4.72	10 17 41.24
26	10 23 4.37	4.59	+10 5 50.7	49.4	9.147	−52.61	+ 1 26.55	15 52.48	1 4.67	10 21 37.79
27	10 26 43.69	43.87	9 44 43.1	42.1	9.131	53.00	1 9.32	15 52.70	1 4.61	10 25 34.35
28	10 30 22.63	22.76	9 23 26.3	25.6	9.115	53.39	0 51.71	15 52.93	1 4.56	10 29 30.90
29	10 34 1.20	1.29	9 2 0.5	0.1	9.100	53.75	0 33.74	15 53.16	1 4.51	10 33 27.46
30	10 37 39.43	39.47	8 40 26.2	26.1	9.086	54.10	+ 0 15.42	15 53.39	1 4.46	10 37 24.01
31	10 41 17.33	17.32	+ 8 18 43.7	43.9	9.073	−54.44	− 0 3.23	15 53.62	1 4.41	10 41 20.57
Sept. 1	10 44 54.92	54.86	7 56 53.2	53.8	9.060	54.76	0 22.19	15 53.86	1 4.37	10 45 17.12
2	10 48 32.21	32.11	7 34 55.1	56.0	9.048	55.07	0 41.45	15 54.10	1 4.33	10 49 13.68
3	10 52 9.22	9.07	7 12 49.8	50.9	9.037	55.37	1 0.99	15 54.34	1 4.29	10 53 10.23
4	10 55 45.98	45.78	6 50 37.5	38.9	9.027	55.66	1 20.79	15 54.58	1 4.25	10 57 6.79
5	10 59 22.50	22.25	+ 6 28 18.6	20.3	9.017	−55.92	− 1 40.82	15 54.83	1 4.22	11 1 3.34
6	11 2 58.81	58.51	6 5 53.3	55.3	9.009	56.18	2 1.06	15 55.07	1 4.20	11 4 59.90
7	11 6 34.93	34.58	5 43 22.0	24.3	9.002	56.43	2 21.48	15 55.32	1 4.18	11 8 56.45
8	11 10 10.89	10.49	5 20 44.9	47.5	8.996	56.67	2 42.07	15 55.56	1 4.15	11 12 53.00
9	11 13 46.70	46.24	4 58 2.4	5.3	8.990	56.88	3 2.81	15 55.81	1 4.13	11 16 49.55
10	11 17 22.38	21.87	+ 4 35 14.7	17.9	8.985	−57.09	− 3 23.68	15 56.05	1 4.11	11 20 46.11
11	11 20 57.96	57.40	4 12 22.1	25.7	8.981	57.29	3 44.65	15 56.30	1 4.09	11 24 42.66
12	11 24 33.46	32.85	3 49 25.0	28.9	8.978	57.47	4 5.70	15 56.55	1 4.07	11 28 39.22
13	11 28 8.90	8.23	3 26 23.6	27.9	8.976	57.63	4 26.81	15 56.80	1 4.06	11 32 35.77
14	11 31 44.30	43.58	3 3 18.4	23.0	8.975	57.79	4 47.95	15 57.06	1 4.05	11 36 32.32
15	11 35 19.68	18.91	+ 2 40 9.7	14.6	8.974	−57.93	− 5 9.12	15 57.32	1 4.05	11 40 28.87
16	11 38 55.05	54.23	2 16 57.6	62.9	8.975	58.06	5 30.30	15 57.58	1 4.05	11 44 25.43
17	11 42 30.44	29.56	1 53 42.6	48.3	8.976	58.18	5 51.46	15 57.84	1 4.05	11 48 21.98
18	11 46 5.87	4.94	1 30 25.1	31.1	8.978	58.28	6 12.58	15 58.10	1 4.06	11 52 18.54
19	11 49 41.35	40.37	1 7 5.3	11.7	8.980	58.36	6 33.66	15 58.36	1 4.07	11 56 15.09
20	11 53 16.90	15.87	+ 0 43 43.7	50.4	8.983	−58.43	− 6 54.67	15 58.63	1 4.08	12 0 11.64
21	11 56 52.53	51.44	+ 0 20 20.7	27.7	8.987	58.49	7 15.58	15 58.90	1 4.09	12 4 8.19
22	12 0 28.27	27.13	− 0 2 63.4	56.1	8.992	58.52	7 36.38	15 59.17	1 4.10	12 8 4.75
23	12 4 4.13	2.94	0 26 28.4	20.6	8.997	58.54	7 57.06	15 59.44	1 4.12	12 12 1.30
24	12 7 40.12	38.88	0 49 53.7	45.5	9.003	58.55	8 17.61	15 59.72	1 4.14	12 15 57.86
25	12 11 16.27	14.97	− 1 13 18.9	10.4	9.010	−58.54	− 8 38.01	16 0.00	1 4.17	12 19 54.41
26	12 15 52.59	51.24	1 36 43.7	34.9	9.018	58.52	8 58.25	16 0.28	1 4.20	12 23 50.97
27	12 18 29.10	27.70	1 59 67.8	58.7	9.026	58.49	9 18.30	16 0.56	1 4.23	12 27 47.52
28	12 22 5.83	4.38	2 23 30.8	21.4	9.035	58.44	9 38.12	16 0.84	1 4.27	12 31 44.07
29	12 25 42.79	41.29	2 46 52.3	42.6	9.045	58.37	9 57.71	16 1.12	1 4.31	12 35 40.62
30	12 29 20.00	18.45	− 3 10 12.0	2.0	9.056	−58.28	−10 17.05	16 1.40	1 4.35	12 39 37.18
31	12 32 57.48	55.88	− 3 33 29.5	19.2	9.066	−58.17	−10 36.13	16 1.69	1 4.39	12 43 33.73

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0^{s}.18 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Oct. 1	12 32 57.48	55.88	− 3 33 29.5	19.2	9.068	−58.17	−10 36.13	16 1.69	1 4.39	12 43 33.73
2	12 36 35.25	33.60	3 56 44.5	33.9	9.081	58.05	10 54.91	16 1.97	1 4.44	12 47 30.29
3	12 40 13.34	11.64	4 19 56.7	45.8	9.094	57.93	11 13.37	16 2.25	1 4.49	12 51 26.84
4	12 43 51.76	50.01	4 42 65.6	54.6	9.109	57.80	11 31.50	16 2.53	1 4.55	12 55 23.40
5	12 47 30.55	28.75	5 5 71.0	59.8	9.125	57.65	11 49.26	16 2.81	1 4.61	12 59 19.94
6	12 51 9.74	7.89	− 5 29 12.5	1.0	9.142	−57.48	−12 6.62	16 3.09	1 4.67	13 3 16.50
7	12 54 49.34	47.44	5 51 69.8	58.0	9.159	57.30	12 23.57	16 3.36	1 4.73	13 7 13.05
8	12 58 29.36	27.42	6 14 62.5	50.5	9.178	57.11	12 40.11	16 3.64	1 4.79	13 11 9.61
9	13 2 9.84	7.86	6 37 50.4	38.2	9.197	56.89	12 56.18	16 3.91	1 4.86	13 15 6.16
10	13 5 50.80	48.77	7 0 33.2	20.8	9.217	56 67	13 11.78	16 4.19	1 4.93	13 19 2.72
11	13 9 32.26	30.19	− 7 22 70.4	57.8	9.239	−56.43	−13 26.87	16 4.46	1 5.00	13 22 59.27
12	13 13 14.24	12.13	7 45 41.6	28.8	9.261	56.17	13 41.44	16 4.73	1 5.08	13 26 55.82
13	13 16 56.76	54.61	8 7 66.5	53.6	9.284	55.90	13 55.47	16 5.00	1 5.16	13 30 52.37
14	13 20 39.84	37.65	8 30 24.7	11.7	9.307	55.62	14 8.95	16 5.27	1 5.24	13 34 48.93
15	13 24 23.50	21.27	8 52 35.9	22.7	9.331	55.31	14 21.85	16 5.54	1 5.32	13 38 45.48
16	13 28 7.75	5.48	− 9 14 39.5	26.2	9.356	−54.99	−14 34.16	16 5.81	1 5.40	13 42 42.04
17	13 31 52.61	50.30	9 36 35.3	21.9	9.382	54.65	14 45.86	16 6.08	1 5.49	13 46 38.59
18	13 35 38.08	35.74	9 58 22.9	9.4	9.408	54.30	14 56.95	16 6.35	1 5.58	13 50 35.15
19	13 39 24.20	21.82	10 19 61.8	48.2	9.435	53.93	15 7.39	16 6.61	1 5.67	13 54 31.70
20	13 43 10.97	8.56	10 41 31.5	17.9	9.462	53.53	15 17.18	16 6.88	1 5.76	13 58 28.26
21	13 46 58.40	55.96	−11 2 51.8	38.1	9.490	−53.13	−15 26.31	16 7.15	1 5.86	14 2 24.81
22	13 50 46.50	44.03	11 23 62.1	48.4	9.518	52.71	15 34.77	16 7.42	1 5.95	14 6 21.37
23	13 54 35.29	32.79	11 44 61.9	48.2	9.547	52.26	15 42.55	16 7.68	1 6.05	14 10 17.92
24	13 58 24.77	22.25	12 5 51.0	37.3	9.576	51.81	15 49.63	16 7.95	1 6.16	14 14 14.48
25	14 2 14.95	12.41	12 26 28.8	15.2	9.606	51.34	15 56.01	16 8.21	1 6.27	14 18 11.03
26	14 6 5.86	3.29	−12 46 55.0	41.5	9.636	−50.84	−16 1.67	16 8.48	1 6.38	14 22 7.59
27	14 9 57.50	54.91	13 6 69.2	55.7	9.666	50.33	16 6.60	16 8.74	1 6.49	14 26 4.14
28	14 13 49.87	47.26	13 26 70.9	57.5	9.698	49.80	16 10.78	16 9.00	1 6.60	14 30 0.70
29	14 17 42.99	40.36	13 46 59.7	46.4	9.730	49.26	16 14.22	16 9.26	1 6.71	14 33 57.25
30	14 21 36.87	34.22	14 6 35.2	22.0	9.762	48.70	16 16.91	16 9.52	1 6.82	14 37 53.81
31	14 25 31.52	28.86	−14 25 57.2	44.0	9.794	+48.12	−16 18 82	16 9.78	1 6.94	14 41 50.36
Nov. 1	14 29 26.96	24.29	14 44 65.1	52.1	9 827	47.53	16 19.94	16 10.03	1 7.05	14 45 46.92
2	14 33 23.19	20.51	15 3 58.5	45.7	9.860	46.92	16 20.27	16 10.28	1 7.17	14 49 43.47
3	14 37 20.23	17.54	15 22 37.1	24.4	9.894	46.29	16 19.80	16 10.53	1 7.28	14 53 40.03
4	14 41 18.09	15.39	15 40 60.5	48.0	9.928	45.65	16 18.51	16 10.77	1 7.40	14 57 36.58
5	14 45 16.78	14.08	−15 58 68.3	56.0	9.963	+45.00	−16 16.40	16 11.01	1 7.52	15 1 33.14
6	14 49 16.30	13.60	16 16 60.2	48.1	9.998	44.32	16 13.44	16 11.25	1 7.64	15 5 29.69
7	14 53 16.67	13.97	16 34 35.8	23.9	10.034	43.63	16 9.62	16 11.48	1 7.76	15 9 26.25
8	14 57 17.90	15.19	16 51 54.7	43.0	10.070	42.93	16 4.96	16 11.71	1 7.88	15 13 22.80
9	15 1 19.98	17.28	17 8 56.4	45.0	10.105	42.21	15 59.45	16 11.93	1 8.00	15 17 19.36
10	15 5 22.93	20.24	−17 25 40.6	29.6	10.141	+41.48	−15 53.07	16 12.15	1 8.12	15 21 15.92
11	15 9 26.74	24.06	17 41 67.0	56.3	10.177	40.73	15 45.82	16 12.36	1 8.24	15 25 12.48
12	15 13 31.43	28.76	17 58 15.0	4.6	10.213	39.95	15 37.70	16 12.57	1 8.36	15 29 9.03
13	15 17 36.99	34.33	18 13 64.3	54.2	10.250	39.17	15 28.70	16 12.78	1 8.47	15 33 5.59
14	15 21 43.42	40.77	18 29 34.5	24.7	10.286	38.36	15 18.84	16 12.98	1 8.59	15 37 2.14
15	15 25 50.70	48.08	−18 44 45.2	35.7	10.321	−37.54	−15 8.12	16 13.19	1 8.71	15 40 58.70
16	15 29 58.83	56.25	−18 59 36.0	26.9	10.356	−36.70	−14 56.55	16 13.39	1 8.83	15 44 55.26

NOTE.—For mean time interval of semidiameter passing meridian, subtract $0^{s}.18$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Decli-nation.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Nov. 16	15 29 58.83	56.25	−18 59 36.0	26.9	10.356	−36.70	−14 56.55	16 13.39	1 8.83	15 44 55.26
17	15 34 7.81	5.26	19 13 66.4	57.7	10.391	35.85	14 44.13	16 13.59	1 8.95	15 48 51.82
18	15 38 17.63	15.11	19 28 16.2	7.8	10.426	34.97	14 30.88	16 13.79	1 9.06	15 52 48.37
19	15 42 28.27	25.79	19 41 64.8	56.8	10.460	34.06	14 16.80	16 13.99	1 9.17	15 56 44.93
20	15 46 39.73	37.28	19 55 32.0	24.3	10.494	33.17	14 1.91	16 14.18	1 9.28	16 0 41.49
21	15 50 51.99	49.57	−20 8 37.3	29.9	10.527	−32.25	−13 46.21	16 14.37	1 9.39	16 4 38.05
22	15 55 5.03	2.64	20 21 20.2	13.2	10.560	31.32	13 29.73	16 14.56	1 9.50	16 8 34.60
23	15 59 18.83	16.49	20 33 40.5	33.8	10.591	30.38	13 12.49	16 14.75	1 9.61	16 12 31.16
24	16 3 33.39	31.10	20 45 37.9	31.5	10.622	29.42	12 54.49	16 14.93	1 9.71	16 16 27.72
25	16 7 48.69	46.45	20 57 11.9	5.9	10.652	28.44	12 35.75	16 15.11	1 9.81	16 20 24.28
26	16 12 4.70	2.51	−21 8 22.3	16.7	10.682	−27.45	−12 16.29	16 15.29	1 9.91	16 24 20.83
27	16 16 21.42	19.28	21 19 8.7	3.4	10.711	26.44	11 56.13	16 15.47	1 10.01	16 28 17.39
28	16 20 38.82	36.74	21 29 30.8	25.9	10.739	25.42	11 35.29	16 15.63	1 10.11	16 32 13.95
29	16 24 56.89	54.87	21 39 28.4	23.8	10.766	24.38	11 13.79	16 15.79	1 10.20	16 36 10.51
30	16 29 15.60	13.64	21 48 61.2	56.9	10.793	23.34	10 51.64	16 15.95	1 10.29	16 40 7.06
Dec. 1	16 33 34.93	33.04	−21 58 8 8	4.9	10.819	−22.28	−10 28.86	16 16.10	1 10.38	16 44 3.62
2	16 37 54.88	53.05	22 6 51.0	47.5	10.844	21.22	10 5.47	16 16.25	1 10.46	16 48 0.18
3	16 42 15.42	13.66	22 15 7.6	4.4	10.868	20.14	9 41.49	16 16.39	1 10.54	16 51 56.74
4	16 46 36.53	34.84	22 22 58.3	55.4	10.892	19.06	9 16.94	16 16.53	1 10.62	16 55 53.30
5	16 50 58.19	56.58	22 30 23.0	20.4	10.914	17.97	8 51.83	16 16.66	1 10.70	16 59 49.86
6	16 55 20.38	18.85	−22 37 21.4	19.1	10.935	−16.88	− 8 26.18	16 16.78	1 10.76	17 3 46.41
7	16 59 43.09	41.63	22 43 53.3	51.3	10.955	15.78	8 0.03	16 16.90	1 10.82	17 7 42.97
8	17 4 6.27	4.89	22 49 58.4	56.6	10.975	14.66	7 33.40	16 17.02	1 10.88	17 11 39.53
9	17 8 29.90	28.60	22 55 36.5	34.9	10.993	13.53	7 6.32	16 17.12	1 10.94	17 15 36.09
10	17 12 53.97	52.75	23 0 47.6	46.2	11.010	12.40	6 38.81	16 17.22	1 11.00	17 19 32.65
11	17 17 18.44	17.30	−23 5 31.3	30.1	11.026	−11.26	− 6 10.90	16 17.32	1 11.05	17 23 29.21
12	17 21 43.28	42.23	23 9 47.6	46.6	11.042	10.11	5 42.61	16 17.42	1 11.09	17 27 25.77
13	17 26 8.46	7.49	23 13 36.3	35.4	11.056	8.95	5 13.98	16 17.51	1 11.13	17 31 22.33
14	17 30 33.95	33.07	23 16 57.1	56.4	11.068	7.79	4 45.03	16 17.59	1 11.17	17 35 18.88
15	17 34 59.72	58.93	23 19 50.1	49.6	11.078	6.63	4 15.81	16 17.68	1 11.20	17 39 15.44
16	17 39 25.72	25.02	−23 22 15.2	14.8	11.087	− 5.46	− 3 46.36	16 17.75	1 11.23	17 43 12.00
17	17 43 51.92	51.31	23 24 12.0	11.8	11.094	4.29	3 16.71	16 17.82	1 11.25	17 47 8.56
18	17 48 18.28	17.76	23 25 40.7	40.6	11.101	3.11	2 46.90	16 17.89	1 11.27	17 51 5.12
19	17 52 44.76	44.33	23 26 41.1	41 1	11.106	1.93	2 16.97	16 17.96	1 11.28	17 55 1.68
20	17 57 11.32	10.98	23 27 13.2	13.2	11.108	− 0.75	1 46.95	16 18.02	1 11.28	17 58 58.24
21	18 1 37.93	37.68	−23 27 17.0	17.0	11.109	+ 0.43	− 1 16.90	16 18.08	1 11.29	18 2 54.80
22	18 6 4.55	4.39	23 26 52.5	52.5	11.109	1.61	0 46.83	16 18.13	1 11.29	18 6 51.35
23	18 10 31.13	31.07	23 25 59.6	59.6	11.106	2.79	− 0 16.79	16 18.18	1 11.29	18 10 47.91
24	18 14 57.64	57.67	23 24 38.3	38.3	11.103	3.97	+ 0 13.17	16 18.23	1 11.28	18 14 44.47
25	18 19 24.04	24.16	23 22 48.8	48.7	11.098	5.15	0 43.02	16 18.27	1 11.27	18 18 41.03
26	18 23 50.31	50.52	−23 20 31.1	31.0	11.091	+ 6.32	+ 1 12.74	16 18.31	1 11.25	18 22 37.59
27	18 28 16.40	16.71	23 17 45.4	45.2	11.083	7.49	1 42.28	16 18.34	1 11.22	18 26 34.15
28	18 32 42.28	42.69	23 14 31.6	31.3	11.074	8.66	2 11.61	16 18.36	1 11.19	18 30 30.71
29	18 37 7.93	8.42	23 10 49.8	49.4	11.063	9.82	2 40.71	16 18.38	1 11.16	18 34 27.27
30	18 41 33.30	33.88	23 6 40.2	39.7	11.051	10.98	3 9.54	16 18.39	1 11.13	18 38 23.82
31	18 45 58.38	59.04	−23 2 3.0	2.4	11.038	+12.13	+ 3 38.07	16 18.40	1 11.09	18 42 20.38
32	18 50 23.13	23.88	−22 56 58.3	57.5	11.024	+13.27	+ 4 6.27	16 18.41	1 11.05	18 46 16.94

NOTE.—For mean time interval of semidiameter passing meridian, subtract $0^s.19$ from the sidereal interval.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Jan. 1	1 36.97	2.410	20 20 31.39	155.25	−24 22 1.3	+546.0	73.10	15 57.5	58 27.8	I. N. S.
2	2 33.25	2.315	21 21 30.18	149.03	−20 47 13.1	644.1	71.57	16 3.8	58 50.8	I. S.
3	3 27.25	2.205	22 19 35.80	141.47	−15 53 38.1	813.9	69.74	16 8.1	59 6.2	I. S.
4	4 19.02	2.097	23 14 50.56	135.10	−10 3 53.5	925.0	68.17	16 10.3	59 14.0	I. S.
5	5 8.12	2.016	0 8 1.67	131.32	− 3 41 12.2	979.2	67.20	16 10.6	59 15.4	I. S.
6	5 56.35	2.009	1 0 19.91	130.74	+ 2 52 19.7	+979.7	67.07	16 9.6	59 11.8	I. S.
7	6 45.00	2.054	1 53 3.55	133.41	9 15 39.2	928.2	67.76	16 7.4	59 3.5	I. S.
8	7 35.29	2.143	2 47 25.79	138.84	15 7 48.0	823.6	69.13	16 3.9	58 50.9	I. S.
9	8 28.10	2.261	3 44 20.76	145.88	20 7 18.3	665.0	70.87	15 59.4	58 33.9	I. S.
10	9 23.76	2.371	4 44 4.75	152.51	23 53 2.8	456.0	72.45	15 53.4	58 12.2	I. S.
11	10 21.54	2.431	5 45 57.77	156.20	+26 7 11.3	+210.4	73.26	15 46.2	57 45.7	I. N. S.
12	11 19.87	2.412	6 48 23.58	155.04	26 39 51.6	− 46.3	72.97	15 37.8	57 15.0	I. N. S.
13	12 16.71	2.311	7 49 19.98	148.93	25 32 37.4	−284.4	71.46	15 28.7	56 41.3	I. II. N.
14	13 10.40	2.158	8 47 6.75	139.65	22 57 52.6	−481.3	69.13	15 19.2	56 6.2	II. N.
15	14 0.16	1.989	9 40 56.84	129.59	19 14 17.7	−628.2	66.55	15 9.8	55 32.1	II. N.
16	14 46.08	1.842	10 30 56.34	120.67	+14 41 34.7	−728.3	64.22	15 1.5	55 1.4	II. N.
17	15 28.86	1.730	11 17 46.58	113.94	9 37 9.9	−788.5	62.41	14 54.6	54 36.5	II. N.
18	16 9.47	1.663	12 2 26.52	109.85	+ 4 15 11.5	−816.9	61.32	14 50.1	54 19.6	II. N.
19	16 49.01	1.640	12 46 1.87	108.56	− 1 13 0.9	−820.1	61.09	14 48.0	54 12.2	II. N.
20	17 28.60	1.667	13 29 40.43	110.12	− 6 37 47.5	−799.9	61.48	14 48.9	54 15.3	II. N.
21	18 9.38	1.740	14 14 30.64	114.53	−11 49 41.5	−755.2	62.74	14 52.7	54 29.6	II. N.
22	18 52.48	1.860	15 1 40.00	121.68	−16 38 0.6	−680.9	64.71	14 59.6	54 54.5	II. N.
23	19 38.91	2.016	15 52 10.26	131.16	−20 49 23.3	−569.0	67.21	15 9.2	55 30.2	II. N.
24	20 29.42	2.194	16 46 45.60	141.86	−24 7 0.0	−410.7	69.93	15 21.1	56 13.6	II. N. S.
25	21 24.12	2.360	17 45 33.12	151.76	−26 11 13.7	−202.1	72.33	15 34.3	57 2.4	II. N. S.
26	22 22.18	2.466	18 47 42.86	156.26	−26 42 59.5	+ 49.0	73.88	15 48.2	57 53.0	II. N. S.
27	23 21.82	2.486	19 51 27.52	159.48	−25 29 35.2	318.4	74.12	16 1.0	58 40.2	I. II. S.
29	0 20.88	2.429	20 54 37.29	155.60	−22 30 19.4	572.3	73.16	16 11.8	59 20.0	I. II. S.
30	1 17.70	2.310	21 55 32.40	148.74	−17 57 53.8	780.1	71.47	16 19.4	59 48.0	I. S.
31	2 11.64	2.191	22 53 34.37	141.59	−12 14 44.5	924.3	69.75	16 23.5	60 2.5	I. S.
Feb. 1	3 3.04	2.100	23 49 3.13	136.22	− 5 47 30.2	+1000.6	68.41	16 23.7	60 3.3	I. S.
2	3 52.83	2.058	0 42 55.43	133.66	+ 0 57 8.9	1012.4	67.82	16 20.7	59 51.8	I. S.
3	4 42.23	2.067	1 36 23.88	134.22	7 34 27.9	964.9	68.01	16 14.9	59 31.0	I. S.
4	5 32.43	2.124	2 30 41.05	137.63	13 41 49.5	863.2	68.92	16 7.5	59 3.9	I. S.
5	6 24.43	2.213	3 26 45.75	142.99	18 58 17.9	711.1	70.31	15 59.3	58 33.3	I. S.
6	7 18.70	2.307	4 25 7.35	148.71	+23 4 37.5	+513.6	71.72	15 50.5	58 1.4	I. N. S.
7	8 14.98	2.373	5 25 29.92	152.69	25 44 34.8	281.6	72.64	15 41.6	57 29.1	I. N. S.
8	9 12.16	2.379	6 26 46.78	152.97	26 47 48.7	+ 33.8	72.65	15 33.1	56 57.6	I. N.
9	10 8.57	2.310	7 27 17.36	148.86	26 12 49.1	−205.5	71.55	15 24.7	56 26.9	I. N.
10	11 2.60	2.184	8 25 24.38	141.29	24 7 39.5	−413.9	69.59	15 16.7	55 57.3	I. N.
11	11 53.23	2.033	9 20 7.23	132.90	+20 47 29.5	−579.1	67.20	15 9.0	55 29.4	I. II. N.
12	12 40.25	1.887	10 11 12.71	123.45	16 30 29.2	−698.4	64.88	15 2.1	55 3.6	I. II. N. S.
13	13 24.06	1.770	10 59 5.48	116.28	11 34 22.9	−775.6	62.94	14 56.0	54 40.9	II. N. S.
14	14 5.46	1.690	11 44 32.39	111.36	6 14 45.2	−817.1	61.60	14 50.9	54 22.7	II. S.
15	14 45.38	1.646	12 28 30.71	108.93	+ 0 44 42.0	−828.6	60.97	14 47.6	54 10.5	II. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Feb. 15	14 45.38	1.646	12 28 30.71	108.93	+ 0 44 42.0	−828.6	60.97	14 47.6	54 10.5	II. S.
16	15 24.84	1.650	13 12 1.62	109.08	− 4 44 39.2	−814.0	61.08	14 46.3	54 5.7	II. S.
17	16 4.89	1.696	13 56 7.71	111.86	−10 3 11.4	−774.5	61.95	14 47.4	54 9.9	II. S.
18	16 46.57	1.785	14 41 51.67	117.23	−15 0 39.7	−708.1	63.52	14 51.3	54 23.9	II. S.
19	17 30.87	1.913	15 30 13.63	124.96	−19 25 28.9	−610.2	65.68	14 58.0	54 48.6	II. S.
20	18 18.64	2.071	16 22 4.15	134.46	−23 3 42.6	−473.9	68.25	15 7.7	55 23.7	II. S.
21	19 10.34	2.236	17 17 51.16	144.38	−25 38 43.8	−293.4	70.75	15 19.9	56 8.9	II. N. S.
22	20 5.76	2.374	18 17 21.82	152.71	−26 52 32.1	− 68.7	72.78	15 34.2	57 1.8	II. N. S.
23	21 3.81	2.450	19 19 31.31	157.30	−26 29 21.0	+188.4	73.85	15 49.9	57 59.3	II. N.
24	22 2.76	2.448	20 22 34.20	157.14	−24 20 48.0	453.0	73.73	16 5.5	58 56.6	II. N.
25	23 0.80	2.380	21 24 42.76	153.08	−20 30 3.5	+694.2	72.64	16 19.0	59 47.7	II. N.
26	23 56.79	2.280	22 24 48.05	147.29	−15 12 12.2	884.8	71.20	16 30.1	60 27.2	I. II. N.
28	0 50.52	2.198	23 22 37.08	142.05	− 8 51 10.4	1008.2	69.88	16 36.5	60 50.4	I. N. S.
29	1 42.54	2.145	0 18 43.24	138.89	− 1 55 28.2	1057.9	69.12	16 37.7	60 54.6	I. S.
Mar. 1	2 33.84	2.139	1 14 6.43	138.51	+ 5 5 23.9	1034.7	69.07	16 33.8	60 40.4	I. S.
2	3 25.55	2.182	2 9 53.92	140.85	+11 43 13.5	+943.8	69.74	16 25.6	60 11.1	I. S.
3	4 18.62	2.249	3 7 3.43	145.17	17 32 23.8	792.8	70.90	16 14.9	59 31.0	I. S.
4	5 13.58	2.329	4 6 6.54	150.02	22 10 50.4	592.0	72.17	16 2.4	58 44.9	I. S.
5	6 10.25	2.385	5 6 52.99	153.42	25 21 16.9	355.7	73.03	15 49.5	57 57.9	I. N. S.
6	7 7.68	2.390	6 8 24.57	153.53	26 53 21.2	+104.0	73.04	15 37.2	57 12.4	I. N.
7	8 4.43	2.325	7 9 9.75	149.56	+26 45 31.6	−139.8	71.99	15 25.9	56 31.2	I. N.
8	8 58.71	2.202	8 7 36.91	142.28	25 5 14.4	−355.5	70.08	15 15.9	55 54.8	I. N.
9	9 49.77	2.054	9 2 46.25	133.40	22 6 31.3	−530.8	67.72	15 7.4	55 23.6	I. N.
10	10 37.28	1.907	9 54 21.57	124.70	18 6 20.6	−662.9	65.33	15 0.4	54 57.4	I. N.
11	11 21.58	1.788	10 42 43.08	117.40	13 21 38.3	−754.2	63.29	14 54.5	54 36.1	I. II. N.
12	12 3.36	1.700	11 28 33.12	112.15	+ 8 7 48.1	−809.4	61.81	14 50.1	54 19.5	I. II. N.
13	12 43.50	1.651	12 12 44.69	109.21	+ 2 38 17.5	−833.2	60.97	14 46.8	54 7.6	I. II. N. S.
14	13 22.94	1.643	12 56 14.58	108.68	− 2 54 58.1	−828.6	60.86	14 45.0	54 0.8	II. N. S.
15	14 2.66	1.674	13 40 0.43	110.54	− 8 20 59.0	−797.0	61.46	14 44.9	54 0.3	II. S
16	14 43.58	1.743	14 24 59.27	114.74	−13 28 53.6	−737.7	62.71	14 46.4	54 6.4	II. S.
17	15 26.63	1.849	15 12 5.41	121.10	−18 7 10.0	−648.2	64.55	14 50.3	54 20.5	II. S.
18	16 12.56	1.983	16 2 5.77	129.15	−22 2 54.6	−524.4	66.81	14 56.6	54 43.4	II. S.
19	17 1.90	2.129	16 55 30.71	137.95	−25 1 31.2	−362.0	69.17	15 5.4	55 16.0	II. S
20	17 54.65	2.262	17 52 20.91	145.96	−26 47 18.8	−160.5	71.24	15 16.8	55 57.9	II. N. S.
21	18 50.15	2.353	18 51 56.81	151.41	−27 5 36.2	+ 73.6	72.61	15 30.6	56 48.6	II. N.
22	19 47.13	2.383	19 53 1.55	153.26	−25 46 8.0	+394.8	73.01	15 46.1	57 45.7	II. N.
23	20 44.09	2.354	20 54 4.63	151.48	−22 46 28.2	570.4	72.51	16 2.5	58 45.9	II. N.
24	21 39.84	2.289	21 53 55.60	147.58	−18 13 43.3	786.5	71.49	16 18.4	59 43.5	II. N.
25	22 33.94	2.222	22 52 6.86	143.49	−12 23 52.8	953.0	70.37	16 31.5	60 32.6	II. N.
26	23 26.66	2.178	23 48 55.37	140.90	− 5 39 54.6	1055.1	69.68	16 40.9	61 7.2	I. II. N. S.
28	0 18.82	2.177	0 45 10.13	140.78	+ 1 30 21.9	+1083.3	69.64	16 45.0	61 21.9	I. II. N. S.
29	1 11.48	2.220	1 41 54.92	143.39	8 36 21.4	1033.4	70.41	16 43.3	61 15.1	I. S.
30	2 5.65	2.300	2 40 10.56	148.19	15 6 56.7	907.9	71.61	16 36.0	60 48.3	I. S.
31	3 1.96	2.392	3 40 34.71	153.79	20 33 1.4	712.9	73.07	16 24.3	60 5.3	I. S.
32	4 0.30	2.462	4 43 1.54	158.00	+24 30 39.8	+ 468.7	74.17	16 9.8	59 12.1	I. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Apr. 1	4 0.30	2.462	4 43 1.54	158.00	+24 30 39.8	+408.7	74.17	16 9.8	59 12.1	I. S.
2	4 59.67	2.473	5 46 30.00	158.61	26 44 35.5	+199.4	74.36	15 54.1	58 15.2	I. S.
3	5 58.35	2.404	6 49 16.75	154.51	27 10 57.7	− 64.2	73.38	15 38.9	57 19.3	I. N.
4	6 54.55	2.270	7 49 34.97	146.50	25 57 16.1	−297.5	71.38	15 25.1	56 28.3	I. N.
5	7 47.11	2.110	8 46 13.70	136.61	23 18 55.1	−486.4	68.80	15 13.1	55 44.4	I. N.
6	8 35.70	1.946	9 38 53.24	126.86	+19 34 19.1	−629.2	66.16	15 3.3	55 8.5	I. N.
7	9 20.67	1.810	10 27 55.87	118.68	15 1 13.4	−729.9	63.86	14 55.6	54 40.4	I. N.
8	10 2.82	1.790	11 14 8.10	112.76	9 55 8.5	−795.1	62.14	14 50.1	54 20.1	I. N.
9	10 43.08	1.657	11 58 26.80	109.25	+ 4 29 17.3	−829.5	61.08	14 46.4	54 6.5	I. N.
10	11 22.44	1.633	12 41 51.31	108.21	− 1 4 40.5	−835.9	60.75	14 44.5	53 59.2	I. N.
11	12 1.87	1.657	13 25 20.29	109.60	− 6 35 50.4	−815.3	61.14	14 44.1	53 57.6	I. II. N.
12	12 42.32	1.716	14 9 50.35	113.27	−11 53 9.9	−766.3	62.19	14 45.1	54 1.5	II. N. S.
13	13 24.66	1.813	14 56 14.31	119.00	−16 44 49.5	−686.4	63.84	14 47.7	54 11.1	II. S.
14	14 9.64	1.936	15 45 16.96	126.36	−20 57 42.8	−571.8	65.91	14 51.9	54 26.6	II. S.
15	14 57.73	2.071	16 37 27.22	134.48	−24 17 23.6	−490.1	68.13	14 58.0	54 48.7	II. S.
16	15 48.98	2.194	17 32 47.11	141.94	−26 28 51.7	−231.4	70.14	15 6.0	55 18.2	II. S.
17	16 42.82	2.281	18 30 42.56	147.10	−27 18 20.1	− 11.8	71.53	15 15.9	55 55.0	II. N. S.
18	17 38.11	2.314	19 30 5.80	140.14	−26 36 1.9	+294.7	72.06	15 28.0	56 39.2	II. N.
19	18 33.50	2.291	20 29 34.67	147.78	−24 18 40.3	400.2	71.71	15 41.7	57 29.7	II. N.
20	19 27.87	2.236	21 28 2.40	144.31	−20 30 31.2	675.9	70.82	15 56.6	58 24.2	II. N.
21	20 20.73	2.171	22 24 59.34	140.52	−15 22 41.3	+856.3	69.80	16 11.6	59 19.1	II. N.
22	21 12.29	2.130	23 20 37.89	138.02	− 9 11 48.7	989.2	69.08	16 25.1	60 9.3	II. N.
23	22 3.30	2.129	0 15 43.73	137.93	− 2 19 7.2	1063.5	69.01	16 36.1	60 49.4	II. N.
24	22 54.87	2.176	1 11 22.57	140.80	+ 4 49 46.7	1068.6	69.70	16 42.6	61 13.2	II. N.
25	23 48.15	2.270	2 8 44.95	146.47	11 45 20.2	995.8	71.13	16 43.8	61 17.4	II. N.
	-									
27	0 44.10	2.394	3 8 47.69	153.89	+17 55 30.2	+841.8	73.00	16 39.1	61 0.0	I. N. S.
28	1 43.02	2.510	4 11 48.75	160.87	22 49 0.5	614.9	74.75	16 29.3	60 23.7	I. S.
29	2 44.13	2.569	5 17 2.37	164.45	26 0 45.2	338.3	75.72	16 15.7	59 33.3	I. S.
30	3 45.59	2.534	6 22 36.66	162.37	27 17 51.5	+ 45.5	75.25	15 59.8	58 35.2	I. S.
May 1	4 45.07	2.407	7 26 11.34	154.71	26 42 50.1	−216.7	73.44	15 43.5	57 35.4	I. N.
2	5 40.72	2.224	8 25 56.52	143.72	+24 30 56.8	−433.5	70.70	15 27.9	56 39.2	I. N.
3	6 31.81	2.031	9 21 6.83	132.23	21 3 25.4	−595.2	67.72	15 14.5	55 49.6	I. N.
4	7 18.57	1.869	10 11 56.24	122.94	16 41 17.0	−708.1	65.01	15 3.4	55 9.1	I. N.
5	8 1.81	1.743	10 59 14.29	114.72	11 42 18.5	−780.9	62.87	14 55.0	54 38.1	I. N.
6	8 42.60	1.663	11 44 5.01	109.97	6 20 42.2	−822.2	61.45	14 49.3	54 16.8	I. N.
7	9 22.03	1.630	12 27 35.30	108.01	+ 0 48 5.1	−836.6	60.84	14 46.0	54 4.5	I. N.
8	10 1.25	1.641	13 10 50.45	108.68	− 4 45 14.1	−825.7	60.97	14 44.7	54 0.2	I. N.
9	10 41.23	1.695	13 54 52.31	111.87	−10 8 55.2	−788.0	61.83	14 45.4	54 3.1	I. N.
10	11 22.94	1.784	14 40 38.48	117.32	−15 11 40.9	−720.3	63.34	14 48.0	54 12.1	I. N.
11	12 7.21	1.904	15 28 58.48	124.57	−19 40 33.6	−617.8	65.32	14 51.8	54 26.2	I. II. S.
12	12 54.60	2.043	16 20 26.24	132.78	−23 20 46.6	−476.6	67.53	14 57.0	54 45.2	II. S.
13	13 45.23	2.171	17 15 8.34	140.51	−25 56 33.7	−289.3	69.59	15 3.4	55 8.8	II. S.
14	14 38.55	2.263	18 12 33.25	146.07	−27 13 11.8	− 82.4	71.06	15 11.0	55 36.6	II. N. S.
15	15 33.42	2.297	19 11 31.21	148.12	−27 0 5.4	+149.6	71.65	15 19.8	56 9.1	II. N.
16	16 28.37	2.271	20 10 33.60	146.52	−25 13 34.3	+381.0	71.32	15 29.9	56 45.9	II. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
May 16	16 28.37	2.271	20 10 33.60	146.52	−25 13 34.3	+381.0	71.32	15 29.9	56 45.9	II. N.
17	17 22.13	2.203	21 8 24.39	142.44	−21 57 46.4	593.3	70.31	15 41.0	57 26.8	II. N.
18	18 14.06	2.125	22 4 25.55	137.72	−17 23 16.1	772.8	69.10	15 52.9	58 10.6	II. N.
19	19 4.28	2.065	22 58 43.61	134.10	−11 44 51.7	911.6	68.14	16 5.0	58 55.1	II. N.
20	19 53.51	2.044	23 52 1.56	132.87	− 5 20 4.5	1003.7	67.78	16 16.4	59 37.1	II. N.
21	20 42.84	2.075	0 45 26.01	134.72	+ 1 30 58.1	+1041.5	68.22	16 26.1	60 12.7	II. N.
22	21 33.57	2.160	1 40 14.89	139.88	8 24 47.9	1015.9	69.50	16 32.8	60 37.2	II. N.
23	22 26.95	2.293	2 37 43.29	147.87	14 53 54.7	916.6	71.48	16 35.4	60 46.6	II. N.
24	23 23.85	2.448	3 38 43.03	157.13	20 27 30.6	738.2	73.74	16 33.1	60 38.3	II. N. S.
26	0 24.23	2.573	4 43 12.31	164.74	24 34 56.7	488.7	75.60	16 26.1	60 12.4	I. S.
27	1 26.75	2.617	5 49 50.52	167.34	+26 52 32.3	+195.4	76.24	16 14.9	59 31.3	I. S.
28	2 28.95	2.546	6 56 8.94	163.04	27 11 9.5	− 98.4	75.27	16 0.9	58 39.9	I. N. S.
29	3 28.20	2.379	7 59 30.65	153.06	25 38 59.8	−353.2	72.90	15 45.7	57 43.9	I. N.
30	4 22.87	2.173	8 58 16.22	140.61	22 36 37.7	−548.1	69.82	15 30.6	56 48.7	I. N.
31	5 12.60	1.976	9 52 4.79	128.72	18 28 25.7	−683.6	66.75	15 17.0	55 58.6	I. N.
June 1	5 58.01	1.816	10 41 33.13	119 11	+13 36 19.9	−769.7	64.16	15 5.5	55 16.3	I. N.
2	6 40.16	1.705	11 27 45.99	112 47	8 17 40.2	−818 2	62.31	14 57.0	54 43.7	I. N.
3	7-20.28	1.645	12 11 56.36	108.90	+ 2 45 38.3	−837.6	61.23	14 50.5	54 21.6	I. N.
4	7 59.57	1.634	12 55 16.64	108.28	− 2 49 9.6	−832.4	60.99	14 47.3	54 9.9	I. N.
5	8 39.18	1.671	13 38 55.94	110.45	− 8 17 7.3	−803.1	61.58	14 46.8	54 7.9	I. N.
6	9 20.18	1.751	14 23 59.27	115.24	−13 28 7.1	−747.0	62.85	14 48.6	54 14.5	I. N.
7	10 3.55	1.867	15 11 25.12	122 25	−18 10 21.8	−658.4	64.74	14 52.5	54 28.7	I. N.
8	10 50.04	2.008	16 1 59.09	130.74	−22 9 43.8	−531 6	66.97	14 58.0	54 48.9	I. S.
9	11 40.01	2.152	16 56 1.91	139.37	−25 10 2.4	−362.9	69.21	15 4.7	55 13.4	I. S.
10	12 33.14	2.267	17 53 14.99	146.25	−26 54 49.6	−155.5	70.98	15 12.2	55 41.2	II. S
11	13 28.35	2.321	18 52 33.46	149.58	−27 10 47.2	+ 78.1	71.83	15 20.4	56 11.1	II. S.
12	14 24.03	2.305	19 52 19.98	148.61	−25 51 39.2	316.2	71.32	15 28.8	56 41.9	II. N. S.
13	15 18.59	2.233	20 50 59.13	144.93	−23 0 17.6	536.2	70.61	15 37.6	57 13.4	II. N.
14	16 11.05	2.136	21 47 31.58	138.41	−18 47 37.0	720.7	69.17	15 46.0	57 45.2	II. N.
15	17 1.24	2.050	22 41 47.96	133.20	−13 29 29.7	862.4	67.86	15 54.6	58 16.7	II. N.
16	17 49.73	1.998	23 34 22.05	130.09	− 7 23 53.7	+957.8	67.00	16 2.8	58 46.8	II. N.
17	18 37.56	1.996	0 26 16.23	129.98	− 0 49 42.2	1004 9	67.08	16 10.3	59 14.5	II. N.
18	19 26.02	2.051	1 18 48.26	133.27	+ 5 53 0.4	999.4	67.81	16 16.5	59 37.5	II. N.
19	20 16.47	2.161	2 13 19.97	139.89	12 21 51.6	934.0	69.55	16 20.9	59 53.3	II. N.
20	21 10.10	2.311	3 11 2.93	148.97	18 11 15.3	800.8	71.75	16 22.4	59 59.2	II. N.
21	22 7.53	2.471	4 12 35.11	158.52	+22 53 1.8	+596.4	74.10	16 20.8	59 52.8	II. N. S.
22	23 8.34	2.589	5 17 29.83	165.25	26 0 12.2	331.7	75.67	16 15.4	59 33.3	II. S.
24	0 10.70	2.593	6 23 58.62	165.95	27 14 10.3	+ 37.0	75.80	16 6.8	59 1.7	I. S.
25	1 11.94	2.492	7 29 19.73	159.73	26 31 41.9	−243.6	74.35	15 55.6	58 20.4	I. S.
26	2 9.64	2.307	8 31 7.51	148.71	24 5 55.0	−475.3	71.68	15 42.8	57 33.3	I. N.
27	3 2.55	2.102	9 28 7.60	136.38	+20 19 58.9	−643.8	68.56	15 29.5	56 44.8	I. N.
28	3 50.71	1.916	10 20 21.15	125.18	15 38 42.4	−753.6	65.72	15 17.4	55 59.0	I. N.
29	4 34.91	1.775	11 8 37.37	116.68	10 23 24.8	−815.9	63.40	15 6.2	55 19.1	I. N.
30	5 16.33	1.084	11 54 6.07	111.25	+ 4 50 35.6	−842.7	61.92	14 57.6	54 47.6	I. N.
31	5 56.21	1.645	12 38 1.80	108.22	− 0 47 15.9	−849.1	61.25	14 51.9	54 26.3	I. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
July 1	5 56.21	1.645	12 38 1.80	108.92	− 0 47 15.9	−842.1	61.25	14 51.9	54 26.3	I. N.
2	6 35.76	1.657	13 21 37.55	109.57	− 6 20 2.3	−817.7	61.43	14 48.9	54 15.6	I. N.
3	7 16.13	1.714	14 6 3.27	113.04	−11 38 15.3	−769.1	62.37	14 48.9	54 15.5	I. N.
4	7 58.43	1.816	14 52 24.52	119.13	−16 31 35.7	−692.4	64.05	14 51.7	54 25.7	I. N.
5	8 43.59	1.951	15 41 38.21	127.29	−20 47 38.6	−581.6	66.19	14 56.9	54 44.8	I. N.
6	9 32.26	2.104	16 34 23.01	136.49	−21 11 21.7	−429.9	68.57	15 4.1	55 11.6	I. N.
7	10 24.52	2.245	17 30 44.03	144.96	−26 25 51.3	−235.6	70.70	15 12.8	55 43.5	I. N. S.
8	11 19.66	2.338	18 29 58.03	150.56	−27 15 5.2	− 5.7	72.05	15 22.3	56 18.5	I. S.
9	12 16.18	2.357	19 30 35.07	151.72	−26 28 18.8	+240.2	72.34	15 32.1	56 54.0	I. II. S
10	13 12.27	2.304	20 30 45.83	148.55	−24 4 3.1	477.1	71.55	15 41.2	57 28 0	II. N. S.
11	14 6.47	2.206	21 29 3.23	142.66	−20 11 0.2	+681.1	70.10	15 49.6	57 58.5	II. N.
12	14 58.16	2.102	22 24 50.17	136.37	−15 5 27.7	838.0	68.55	15 56.7	58 24.6	II. N.
13	15 47.60	2.022	23 18 20.86	131.55	− 9 7 27.6	942.9	67.34	16 2.5	58 45.6	II. N.
14	16 35.62	1.987	0 10 26.49	129.43	− 2 37 58.0	995.7	66.83	16 6.8	59 1.7	II. N.
15	17 23.42	2.005	1 2 18.93	130.51	+ 4 2 8.0	995.9	67.14	16 9.7	59 12.7	II. N.
16	18 12.33	2.079	1 55 18.13	134.95	+10 31 39.2	+942.3	68.33	16 11.5	59 18.7	II. N.
17	19 3.61	2.201	2 50 40.21	142.28	16 28 10.8	830.3	70.21	16 11.6	59 19.4	II. N.
18	19 58.20	2.347	3 49 20.66	151.17	21 27 35.6	656.5	72.39	16 10.1	59 13.8	II. N.
19	20 56.24	2.482	4 51 29.40	159.14	25 5 25.2	424.0	74.28	16 6.7	59 1.4	II. N.
20	21 56.76	2.546	5 56 7.10	163.07	27 1 7.7	+150.2	75.20	16 1.3	58 41.4	II. S.
21	22 57.65	2.506	7 1 7.09	160.83	+27 4 29.4	−131.5	74.61	15 53.8	58 14.2	II. S.
22	23 56.44	2.376	8 4 1.00	152.87	25 19 52.6	−384.0	72.63	15 44.8	57 40.7	I. II. S.
24	0 51.34	2.193	9 3 0.36	141.81	22 4 26.3	−582.9	69.85	15 34.5	57 2.8	I. S.
25	1 41.70	2.006	9 57 26.89	130.56	17 41 31.9	−721.6	66.99	15 23.8	56 23.6	I. N.
26	2 27.89	1.849	10 47 42.03	121.10	12 34 14.9	−806.3	64.48	15 13.4	55 45.3	I. N.
27	3 10.81	1.735	11 34 40.90	114.30	+ 7 2 11.3	−847.7	62.65	15 4.1	55 11.3	I. N.
28	3 51.60	1.671	12 19 31.74	110.44	+ 1 20 34.0	−855.5	61.62	14 56.6	54 43.9	I. N.
29	4 31.44	1.656	13 3 25.29	109.52	− 4 18 35.2	−836.2	61.40	14 51.5	54 24.9	I. N.
30	5 11.48	1.687	13 47 30.97	111.44	− 9 45 7.8	−792.6	61.99	14 49.1	54 15.9	I. N.
31	5 52.84	1.765	14 32 55.43	116.05	−14 49 15.7	−723.6	63.30	14 49.5	54 17.7	I. N.
Aug. 1	6 36.53	1.881	15 20 40.23	123.06	−19 20 6.6	−695.1	65.22	14 52.9	54 30.3	I. N.
2	7 23.37	2.025	16 11 35.46	131.75	−23 4 40.1	−491.3	67.55	14 59.2	54 53.4	I. N.
3	8 13.83	2.177	17 6 7.77	140.85	−25 47 33.9	−316.4	69.85	15 8.2	55 25.7	I. N.
4	9 7.68	2.302	18 4 4.10	148.40	−27 12 22.7	−101.6	71.70	15 18.8	56 5.2	I. N. S.
5	10 3.88	2.367	19 4 22.16	152.37	−27 4 58.0	+141.8	72.64	15 30.8	56 48.9	I. S.
6	11 0.78	2.350	20 5 21.94	151.86	−25 18 1.2	+391.6	72.46	15 42.9	57 33.3	I. S.
7	11 56.67	2.269	21 5 21.31	147.61	−21 54 21.5	621.1	71.35	15 54.2	58 15.1	I. II. S.
8	12 50.46	2.191	22 3 13.80	141.67	−17 6 47.9	808.2	69.87	16 3.8	58 50.4	II. N. S.
9	13 41.90	2.100	22 58 45.41	136.19	−11 15 9.4	940.2	68.49	16 10.9	59 16.7	II. N.
10	14 31.52	2.043	23 52 27.53	132.75	− 4 42 37.1	1012.4	67.64	16 15.2	59 32.8	II. N.
11	15 20.33	2.033	0 45 20.43	132.18	+ 2 6 45.6	+1024.5	67.55	16 16.8	59 38.4	II. N.
12	16 9.54	2.076	1 38 37.69	134.77	8 49 9.6	977.6	68.30	16 15.8	59 34.7	II. N.
13	17 0.38	2.166	2 33 32.89	140.94	15 1 2.7	872.0	69.74	16 12.7	59 23.5	II. N.
14	17 53.82	2.289	3 31 4.75	147.60	20 19 1.7	708.3	71.63	16 8.1	59 6.4	II. N.
15	18 50.26	2.410	4 31 36.93	154.87	+24 20 29.7	+ 490.7	73.43	16 2.3	58 45.0	II. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Aug. 15	18 50.26	2.410	4 31 36.93	154.87	+24 20 29.7	+490.7	73.43	16 2.3	58 45.0	II. N.
16	19 49.15	2.487	5 34 36.87	159.44	26 46 9.6	+233.1	74.51	15 55.6	58 20.5	II. N. S.
17	20 48.93	2.480	6 38 30.03	159.05	27 24 29.5	− 41.0	74.34	15 48.2	57 53.4	II. S.
18	21 47.46	2.383	7 41 7.92	153.30	26 15 40.5	−297.9	72.86	15 40.3	57 24.3	II. S.
19	22 42.89	2.228	8 40 39.23	144.56	23 31 45.4	−513.2	70.47	15 31.9	56 53.4	II. S.
20	23 34.27	2.053	9 36 7.20	133.43	+19 32 26.5	−674.1	67.69	15 23.3	56 21.6	II. S.
22	0 21.62	1.896	10 27 32.47	123.96	14 39 35.5	−781.5	65.13	15 14.6	55 50.1	I. S.
23	1 5.59	1.774	11 15 34.48	116.63	9 13 25.8	−842.1	63.18	15 6.4	55 20.0	I. N. S.
24	1 47.15	1.695	12 1 11.50	111.91	+ 3 30 57.8	−864.3	61.93	14 59.2	54 53.2	I. N.
25	2 27.37	1.662	12 45 27.86	109.90	− 2 13 52.1	−855.0	61.40	14 53.3	54 31.3	I. N.
26	3 7.33	1.673	13 29 28.24	110.56	− 7 49 24.3	−818.3	61.66	14 49.1	54 16.4	I. N.
27	3 48.07	1.729	14 14 15.53	113.81	−13 5 6.8	−755.7	62.65	14 47.3	54 10.0	I. N.
28	4 30.57	1.820	15 0 48.82	119.38	−17 50 24.2	−665.7	64.27	14 48.3	54 13.1	I. N.
29	5 15.68	1.944	15 50 0.04	126.83	−21 53 38.2	−544.6	66.34	14 52.0	54 27.0	I. N.
30	6 4.02	2.085	16 42 25.03	135.31	−25 1 25.0	−387.8	68.61	14 58.8	54 51.7	I. N.
31	6 55.71	2.218	17 38 11.28	143.31	−26 58 57.0	−193.6	70.63	15 8.3	55 26.9	I. N. S.
Sept. 1	7 50.19	2.312	18 36 45.92	149.04	−27 31 51.0	+ 33.5	72.06	15 20.4	56 11.2	I. S.
2	8 46.26	2.347	19 36 55.87	151.12	−26 29 29.7	279.4	72.46	15 33.7	57 1.8	I. S.
3	9 42.38	2.318	20 37 8.69	149.38	−23 48 39.1	522.0	71.98	15 48.7	57 55.4	I. S.
4	10 37.25	2.248	21 36 6.58	145.17	−19 35 24.6	737.7	70.88	16 2.9	58 47.5	I. S.
5	11 30.27	2.169	22 33 12.83	140.43	−14 4 30.8	+907.7	69.61	16 15.0	59 32.4	I. S.
6	12 21.58	2.111	23 28 36.65	136.89	− 7 37 6.9	1018.8	68.72	16 24.3	60 6.0	II. S.
7	13 11.94	2.092	0 23 2.86	135.76	− 0 38 15.3	1064.0	68.44	16 29.4	60 24.8	II. N.
8	14 2.42	2.122	1 17 36.36	137.53	+ 6 25 0.5	1040.6	68.94	16 30.1	60 27.6	II. N.
9	14 54.17	2.198	2 13 26.85	142.10	13 5 0.6	948.1	70.19	16 26.8	60 15.4	II. N.
10	15 48.18	2.305	3 11 32.89	148.60	+18 54 37.3	+789.6	71 91	16 20.2	59 50.8	II. N.
11	16 44.90	2.417	4 12 21.61	155.28	23 28 44.2	572.3	73.64	16 11.2	59 17.8	II. N.
12	17 43.90	2.490	5 15 27.77	159.62	26 26 51.7	313 0	74.71	16 1.0	58 40.1	II. N. S.
13	18 43.77	2.486	6 19 26.86	159.40	27 36 53.4	+ 37.0	74.63	15 50.2	58 0.9	II. S.
14	19 42.53	2.396	7 22 18.41	154.08	26 58 13.3	−225.5	73.26	15 39.7	57 22.6	II. S.
15	20 38.35	2.247	8 22 13.32	145.07	+24 41 36.3	−449.6	70.96	15 29.9	56 46.3	II. S.
16	21 30.24	2.076	9 18 11.50	134.76	21 5 12.9	−623.6	68.25	15 20.9	56 12.9	II. S.
17	22 18.11	1.916	10 10 8.18	125.22	16 29 37.4	−746.3	65.64	15 12.6	55 42.5	II. S.
18	23 2.53	1.791	10 58 37.72	117.63	11 14 18.4	−823.0	63.52	15 5.1	55 15.1	II. S.
19	23 44.42	1.705	11 44 34.32	112.52	+ 5 36 13.8	−861.3	62.07	14 58.6	54 51.0	I. II. S.
21	0 24.78	1.663	12 28 58.96	109.97	− 0 10 8.7	−865.4	61.35	14 53.1	54 30.8	I. N. S.
22	1 4.63	1.663	13 12 52.97	109.94	− 5 52 14.6	−840.1	61.38	14 48.8	54 15.0	I. N.
23	1 44.95	1.702	13 57 15.48	112.31	−11 18 35.0	−787.0	62.10	14 46.0	54 4.8	I. N.
24	2 26.66	1.778	14 43 1.77	116.88	−16 17 58.2	−705.1	63.45	14 45.0	54 1.5	I. N.
25	3 10.58	1.884	15 31 0.30	123.27	−20 38 44.6	−593.3	65.30	14 46.3	54 6.2	I. N.
26	3 57.28	2.008	16 21 46.69	130.72	−24 8 19.8	−448.9	67.36	14 50.1	54 20.0	I. N.
27	4 46.99	2.132	17 15 34.31	138.13	−26 33 21.3	−270.7	69.37	14 56.6	54 44.0	I. N.
28	5 39.41	2.230	18 12 4.63	144.02	−27 40 43.2	− 61.7	70.92	15 5.9	55 18.4	I. N. S.
29	6 33.66	2.281	19 10 24.66	147.10	−27 19 47.1	+168.7	71.71	15 18.1	56 2.8	I. S.
30	7 28.48	2.278	20 9 19.44	146.94	−25 24 58.4	+404.7	71.62	15 32.5	56 55.8	I. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Oct. 1	8 22.69	2.234	21 7 37.80	144.29	−21 57 36.3	+628.2	70.89	15 48.4	57 53.7	I. S.
2	9 15.60	2.174	22 4 37.34	140.67	−17 6 14.4	822.0	69.90	16 4.4	58 52.7	I. S.
3	10 7.15	2.126	23 0 15.56	137.77	−11 5 49.9	971.3	69.07	16 19.4	59 48.2	I. S.
4	10 57.91	2.111	23 55 6.13	136.88	− 4 16 45.6	1063.5	68.82	16 31.8	60 32.9	I. S.
5	11 48.86	2.142	0 50 7.82	138.76	+ 2 55 54.1	1087.6	69.30	16 39.4	61 1.7	I. II. S.
6	12 41.15	2.222	1 46 30.44	143.60	+10 3 9.5	+1035.3	70.53	16 42.1	61 10.8	II. N.
7	13 35.86	2.340	2 45 18.67	150.71	16 33 30.1	902.8	72.38	16 38.9	60 59.7	II. N.
8	14 33.60	2.469	3 47 9.33	158.41	21 55 25.5	694.8	74.30	16 30.3	60 30.6	II. N.
9	15 34.09	2.560	4 51 44.73	163.92	25 41 38.4	428.6	75.75	16 19.4	59 48.2	II. N.
10	16 35.86	2.569	5 57 37.79	164.50	27 34 34.0	+134.4	75.98	16 5.9	58 58.2	II. N.
11	17 36.66	2.482	7 2 32.74	159.13	+27 30 47.8	−148.8	74.66	15 51.6	58 5.8	II. S.
12	18 34.36	2.317	8 4 20.34	149.31	25 41 4.5	−391.1	72.24	15 37.9	57 15.3	II. S.
13	19 27.71	2.128	9 1 46.75	137.85	22 25 7.8	−579.5	69.26	15 25.3	56 29.4	II. S.
14	20 16.58	1.949	9 54 43.38	127.16	18 5 5.1	−712.6	66.37	15 14.5	55 49.6	II. S.
15	21 1.58	1.808	10 43 47.47	118.61	13 1 11.3	−799.7	63.97	15 5.5	55 16.2	II. S.
16	21 43.70	1.709	11 29 58.28	112.76	+ 7 30 24.1	−848.3	62.26	14 58.0	54 49.1	II. S.
17	22 24.03	1.658	12 14 21.26	109.62	+ 1 46 49.9	−864.3	61.33	14 52.4	54 28.1	II. S.
18	23 3.64	1.649	12 58 0.85	109.11	− 3 57 16.5	−851.3	61.12	14 48.1	54 12.3	II. S.
19	23 43.54	1.681	13 41 57.66	111.03	− 9 30 30.5	−809.9	61.66	14 45.2	54 2.0	II. N. S.
21	0 24.64	1.749	14 27 7.46	115.13	−14 41 25.2	−739.6	62.85	14 43.8	53 56.8	I. N.
22	1 7.76	1.847	15 14 18.18	121.02	−19 17 59.0	−637.9	64.54	14 44.0	53 57.4	I. N.
23	1 53.47	1.963	16 4 5.04	128.00	−23 7 18.1	−503.0	66.48	14 45.8	54 4.2	I. N.
24	2 42.01	2.079	16 56 41.85	134.96	−25 55 59.0	−335.0	68.41	14 49.6	54 18.1	I. N.
25	3 33.11	2.172	17 51 52.40	140.57	−27 31 17.1	−137.4	69.92	14 55.5	54 40.2	I. N.
26	4 25.95	2.222	18 48 48.54	143.60	−27 43 2.1	+ 78.8	70.78	15 4.1	55 11.1	I. N. S.
27	5 19.40	2.222	19 46 20.36	143.57	−26 25 44.3	+303.8	70.83	15 15.0	55 51.1	I. S.
28	6 12.30	2.181	20 43 19.81	141.08	−23 39 49.2	521.5	70.19	15 28.1	56 39.4	I. S.
29	7 3.95	2.123	21 39 3.85	137.55	−19 31 24.8	715.8	69.23	15 43.1	57 34.5	I. S.
30	7 54.25	2.073	22 33 26.60	134.57	−14 11 18.6	878.3	68.42	15 59.2	58 34.1	I. S.
31	8 43.69	2.054	23 26 57.86	133.44	− 7 54 10.0	999.6	68.06	16 15.3	59 32.9	I. S.
Nov. 1	9 33.23	2.082	0 20 34.61	135.13	− 0 58 36.3	+1068.4	68.44	16 29.6	60 25.2	I. S.
2	10 24.08	2.163	1 15 30.58	140.07	+ 6 11 55.2	1072.0	69.68	16 40.4	61 4.6	I. S.
3	11 17.54	2.297	2 13 3.53	148.12	13 8 29.3	996.5	71.70	16 46.0	61 25.7	I. S.
4	12 14.64	2.462	3 14 15.46	158.00	19 17 25.2	833.1	74.17	16 45.8	61 24.9	II. N.
5	13 15.62	2.610	4 19 21.01	166.93	24 3 48.2	586.1	76.35	16 39.5	61 2.2	II. N.
6	14 19.38	2.683	5 27 13.83	171.31	+26 58 39.0	+282.0	77.45	16 28.3	60 20.9	II. N.
7	15 23.44	2.633	6 35 24.75	168.30	27 47 44.8	− 33.7	76.81	16 13.8	59 27.2	II. N.
8	16 24.90	2.473	7 40 58.51	158.62	26 36 15.8	−314.3	74.54	15 57.6	58 27.7	II. S.
9	17 21.69	2.256	8 41 52.00	145.59	23 44 36.3	−532.6	71.33	15 41.4	57 28.6	II. S.
10	18 13.22	2.042	9 37 28.85	132.72	19 38 56.6	−685.2	68.00	15 26.5	56 33.9	II. S.
11	19 0.01	1.865	10 28 20.63	122.08	+14 43 35.3	−783.2	65.10	15 13.8	55 46.7	II. S.
12	19 43.16	1.738	11 15 32.78	114.48	9 18 2.6	−838.3	62.97	15 3.2	55 8.0	II. S.
13	20 23.88	1.664	12 0 20.34	110.01	+ 3 37 18.1	−860.4	61.60	14 55.1	54 38.4	II. S.
14	21 3.45	1.638	12 43 56.85	108.50	− 2 6 38.7	−854.9	61.12	14 49.4	54 17.2	II. S.
15	21 42.96	1.660	13 27 30.54	109.74	− 7 43 10.7	−823.2	61.39	14 45.6	54 3.8	II. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Nov. 16	22 23.46	1.720	14 12 3.56	113.40	−13 1 41.9	−764.5	62.39	14 43.9	53 57.4	II. S.
17	23 5.84	1.816	14 58 29.96	119.10	−17 50 41.5	−675.1	63.96	14 43.9	53 57.3	II. N. S.
18	23 50.79	1.932	15 47 30.99	126.15	−21 57 16.3	−551.9	65.84	14 45.3	54 2.5	I. II. N.
20	0 38.65	2.053	16 39 26.56	133.42	−25 7 28.0	−393.2	67.83	14 48.2	54 13.0	I. N.
21	1 29.20	2.153	17 34 4.99	139.44	−27 7 30.2	−201.3	69.44	14 52.5	54 28.8	I. N.
22	2 21.67	2.209	18 30 38.13	142.78	−27 46 7.3	+ 12.4	70.34	14 58.1	54 50.2	I. N.
23	3 14.80	2.208	19 27 50.87	142.72	−26 57 8.8	233.1	70.44	15 5.8	55 17.6	I. S.
24	4 7.28	2.159	20 24 25.21	139.77	−24 40 58.0	445.2	69.73	15 15.0	55 51.5	I. S.
25	4 58.24	2.086	21 19 27.54	135.34	−21 4 2.5	634.9	68.63	15 26.0	56 31.6	I. S.
26	5 47.42	2.015	22 12 43.36	131.16	−16 17 3.2	794.3	67.55	15 38.5	57 17.8	I. S.
27	6 35.24	1.975	23 4 36.70	128.67	−10 33 6.8	+919.4	66.86	15 52.3	58 8.6	I. S.
28	7 22.58	1.979	23 56 1.39	128.90	− 4 7 9.1	1003.6	66.90	16 6.6	59 0.9	I. S.
29	8 10.67	2.039	0 48 11.30	132.52	+ 2 43 22.1	1040.1	67.81	16 20.1	59 50.9	I. S.
30	9 0.93	2.159	1 42 31.50	139.78	9 36 48.9	1015.8	69.66	16 31.7	60 33.2	I. S.
Dec. 1	9 54.74	2.332	2 40 25.91	150.21	16 5 49.8	915.2	72.26	16 39.6	61 2.0	I. S.
2	10 53.10	2.530	3 42 53.46	162.07	+21 37 16.6	+726.9	75.11	16 42.4	61 12.5	I. N. S.
3	11 55.91	2.691	4 49 48.80	171.79	25 36 2.8	454.7	77.43	16 39.6	61 2.3	I. II. N.
4	13 1.40	2.743	5 59 25.77	174.90	27 34 4.3	+131.1	78.18	16 31.4	60 31.8	II. N.
5	14 6.40	2.649	7 8 33.05	169.30	27 21 17.0	−189.6	76.90	16 18.6	59 45.4	II. N.
6	15 7.73	2.448	8 13 59.13	157.13	25 9 38.3	−456.8	74.03	16 3.2	58 48.6	II. S.
7	16 3.60	2.207	9 13 57.03	142.68	+21 25 46.6	−649.7	70.49	15 46.9	57 48.5	II. S.
8	16 53.88	1.989	10 8 18.90	129 56	16 39 19.2	−772.0	67.11	15 31.1	56 50.5	II. S.
9	17 39.49	1.821	10 57 59.84	119.43	11 15 27.6	−839.4	64.37	15 16.8	55 58.2	II. S.
10	18 21.76	1.709	11 44 19.21	112.77	+ 5 33 6.6	−866.6	62.50	15 5.0	55 14.9	II. S.
11	19 2.04	1.655	12 28 39.50	109.48	− 0 13 53.7	−863.9	61.55	14 55.9	54 41.5	II. S.
12	19 41.64	1.651	13 12 18.22	109.26	− 5 54 44.8	−836.4	61.42	14 49.6	54 18.5	II. S.
13	20 21.76	1.694	13 56 26.34	111.86	−11 19 43.2	−784.3	62.10	14 46.2	54 5.4	II. S.
14	21 3.34	1.778	14 42 7.05	116.91	−16 18 37.7	−705.3	63.47	14 45.1	54 1.6	II. S.
15	21 47.38	1.893	15 30 12.94	123.82	−20 39 48.3	−594.9	65.30	14 46.2	54 5.7	II. S.
16	22 34.39	2.023	16 21 17.65	131.59	−24 9 45.6	−448.7	67.34	14 49.1	54 16.3	II. S.
17	23 24.42	2.141	17 15 24.51	138.70	−26 33 59.2	−267.0	69.17	14 53.4	54 32.5	II. N. S.
19	0 16.87	2.220	18 11 56.46	143.42	−27 39 11.8	− 55 6	70.42	15 0.0	54 53.2	I. N.
20	1 10.48	2.237	19 9 38.64	144.44	−27 16 33.9	+169.3	70.80	15 5.6	55 17.2	I. N.
21	2 3.75	2.193	20 7 0.21	141.81	−25 24 25.1	388.6	70.03	15 13.0	55 44.2	I. S.
22	2 55.44	2.110	21 2 46.79	136.81	−22 8 44.0	584.7	68.83	15 21.2	56 14.2	I. S.
23	3 44.98	2.018	21 56 23.93	131.34	−17 41 10.1	+746.9	67.45	15 30.1	56 46.6	I. S.
24	4 32.53	1.947	22 48 1.03	127.06	−12 16 18.8	870.9	66.34	15 39.6	57 21.8	I. S.
25	5 18.82	1.916	23 38 22.47	125.20	− 6 9 46.0	955.2	65.91	15 49.9	57 59.3	I. S.
26	6 4.97	1.938	0 28 35.95	126.50	+ 0 22 15.0	997.5	66.27	16 0.3	58 37.5	I. S.
27	6 52.36	2.019	1 20 3.35	131.40	7 1 56.6	992.2	67.56	16 10.4	59 14.9	I. S.
28	7 42.43	2.161	2 14 12.52	139.93	+13 28 17.2	+928.1	69.73	16 19.3	59 48.0	I. S.
29	8 36.52	2.350	3 12 23.51	151.32	19 15 24.6	793.8	72.56	16 26.2	60 13.2	I. S.
30	9 35.39	2.550	4 15 21.45	163.30	23 52 42.4	578.9	75.44	16 29.9	60 26.5	I. S.
31	10 38.50	2.693	5 22 35.48	171.90	26 48 57.6	+292.7	77.43	16 29.4	60 24.5	I. N.
32	11 43.67	2.712	6 31 52.60	173.05	+27 41 39.6	− 30.4	77.63	16 23.7	60 6.8	I. N.

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam	S.T. of Sem. Pass Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	23 25.9	18 8 59.92	−20 18 29.9	12.9	4.9	0.35	Feb. 15	23 21.3	21 5 49.85	−18 39 10.3	6.6	2.5	0.17
1	23 17.5	18 4 37.47	20 14 41.5	12.7	4.8	0.34	16	23 24.0	21 12 26.04	18 13 24.4	6.6	2.5	0.17
2	23 9.8	18 0 53.59	20 12 41.8	12.4	4.7	0.34	17	23 26.6	21 19 3.54	17 46 16.2	6.5	2.5	0.17
3	23 2.9	17 57 51.18	20 12 30.2	12.2	4.6	0.33	18	23 29.3	21 25 42.32	17 17 45.2	6.5	2.5	0.17
4	22 56.6	17 55 31.38	20 14 2.6	11.9	4.5	0.32	19	23 32.1	21 32 22.35	16 47 51.4	6.5	2.5	0.17
5	22 51.1	17 53 53.97	−20 17 12.1	11.7	4.4	0.31	20	23 34.8	21 39 3.62	−16 16 34.8	6.5	2.4	0.17
6	22 46.2	17 52 57.79	20 21 48.9	11.4	4.3	0.31	21	23 37.5	21 45 46.09	15 43 55.4	6.5	2.4	0.17
7	22 42.0	17 52 40.91	20 27 42.0	11.2	4.2	0.30	22	23 40.3	21 52 29.77	15 9 53.3	6.4	2.4	0.17
8	22 38.4	17 53 0.95	20 34 39.5	10.9	4.1	0.30	23	23 43.1	21 59 14.69	14 34 28.4	6.4	2.4	0.16
9	22 35.4	17 53 55.26	20 42 20.3	10.7	4.0	0.29	24	23 45.9	22 6 0.86	13 57 41.0	6.4	2.4	0.16
10	22 32.9	17 55 21.20	−20 50 59.1	10.4	3.9	0.28	25	23 48.7	22 12 48.28	−13 19 31.4	6.4	2.4	0.16
11	22 30.9	17 57 16.06	20 59 57.4	10.2	3.8	0.28	26	23 51.6	22 19 36.98	12 40 0.2	6.4	2.4	0.16
12	22 29.3	17 59 37.27	21 9 13.0	10.0	3.7	0.27	27	23 54.5	22 26 26.98	11 59 7.7	6.4	2.4	0.16
13	22 28.1	18 2 22.48	21 18 35.8	9.7	3.6	0.26	28	23 57.4	22 33 18.29	11 16 54.5	6.4	2.4	0.16
14	22 27.2	18 5 29.43	21 27 56.1	9.5	3.6	0.26	Mar. 1	0 0.3	22 40 10.96	10 33 21.8	6.4	2.4	0.16
15	22 26.7	18 8 56.04	−21 37 5.4	9.3	3.5	0.25	2	0 3.3	22 47 5.00	− 9 48 30.6	6.4	2.4	0.16
16	22 26.5	18 12 40.49	21 45 55.9	9.1	3.5	0.25	3	0 6.2	22 54 0.40	9 2 22 2	6.4	2.4	0.16
17	22 26.6	18 16 41.05	21 54 20.6	9.0	3.4	0.24	4	0 9.2	23 0 57.14	8 14 58.4	6.5	2.4	0.16
18	22 26.9	18 20 56.21	22 2 13.5	8.8	3.3	0.24	5	0 12.2	23 7 55.18	7 26 21.6	6.5	2.4	0.16
19	22 27.4	18 25 24.58	22 9 28.7	8.7	3.3	0.23	6	0 15.3	23 14 54.49	6 36 33.9	6.5	2.5	0.16
20	22 28.2	18 30 4.96	−22 16 1.1	8.5	3.2	0.23	7	0 18.4	23 21 54.94	− 5 45 38.3	6.5	2.5	0.16
21	22 29.1	18 34 56.23	22 21 46.5	8.4	3.2	0.23	8	0 21.5	23 28 56.40	4 53 38.5	6.6	2.5	0.16
22	22 30.2	18 39 57.37	22 26 41.0	8.3	3.1	0 22	9	0 24.6	23 35 58.70	4 0 39.2	6.6	2.5	0.16
23	22 31.5	18 45 7.51	22 30 40.9	8.1	3.1	0.22	10	0 27.7	23 43 1.58	3 6 45.5	6.7	2.5	0.16
24	22 32.8	18 50 25.82	22 33 43.0	8.0	3.0	0.21	11	0 30.7	23 50 4.69	2 12 3.5	6.7	2.5	0.16
25	22 34.2	18 55 51.58	−22 35 44.7	7.9	3.0	0.21	12	0 33.8	23 57 7.65	− 1 16 40.0	6.8	2.6	0.16
26	22 35.8	19 1 24.14	22 36 43.4	7.8	3.0	0.21	13	0 36.9	0 4 9.94	− 0 20 43.2	6.8	2.6	0.17
27	22 37.5	19 7 2.92	22 36 36.9	7.7	2.9	0.21	14	0 39.9	0 11 10.94	+ 0 35 37.5	6.9	2.6	0.17
28	22 39.3	19 12 47.37	22 35 23.3	7.6	2.9	0.20	15	0 42.9	0 18 9.93	1 32 11.9	7.0	2.7	0.17
29	22 41.2	19 18 36.98	22 33 0.7	7.5	2.8	0.20	16	0 45.9	0 25 6.06	2 28 48.4	7.1	2.7	0.17
30	22 43.2	19 24 31.34	−22 29 27.5	7.4	2.8	0.20	17	0 48.9	0 31 58.39	+ 3 25 14.8	7.2	2.7	0.18
31	22 45.2	19 30 30.04	22 24 42.4	7.3	2.8	0.20	18	0 51.8	0 38 45.83	4 21 17.3	7.4	2.8	0.18
Feb. 1	22 47.2	19 36 32.73	22 18 44.2	7.3	2.8	0.20	19	0 54.5	0 45 27.15	5 16 41.2	7.5	2.8	0.18
2	22 49.4	19 42 39.08	22 11 31.7	7.2	2.7	0.19	20	0 57.1	0 52 1.05	6 11 11.5	7.7	2.9	0.19
3	22 51.7	19 48 48.78	22 3 3.8	7.1	2.7	0.19	21	0 59.6	0 58 26.18	7 4 33.1	7.8	2.9	0.19
4	22 53.9	19 55 1.56	−21 53 19.6	7.1	2.7	0.19	22	1 1.9	1 4 41.08	+ 7 56 30.9	8.0	3.0	0.20
5	22 56.2	20 1 17.17	21 42 18.3	7.0	2.7	0.19	23	1 4.0	1 10 44.30	8 46 49.4	8.1	3.0	0.20
6	22 58.6	20 7 35.39	21 29 59.1	7.0	2.6	0.19	24	1 5.9	1 16 34.34	9 35 13.9	8.3	3.1	0.21
7	23 1.0	20 13 56.02	21 16 21.4	6.9	2.6	0.18	25	1 7.5	1 22 9.72	10 21 31.0	8.5	3.2	0.21
8	23 3.4	20 20 18.89	21 1 24.5	6.9	2.6	0.18	26	1 8.9	1 27 29.04	11 5 27.7	8.7	3.3	0.22
9	23 5.9	20 26 43.84	−20 45 8.0	6.8	2.6	0.18	27	1 10.0	1 32 30.96	+11 46 52.1	8.9	3.4	0.23
10	23 8.4	20 33 10.71	20 27 31.3	6.8	2.6	0.18	28	1 10.7	1 37 14.18	12 25 33.8	9.2	3.5	0.23
11	23 10.9	20 39 39.36	20 8 33.9	6.7	2.6	0.18	29	1 11.2	1 41 37.52	13 1 23.4	9.4	3.6	0.24
12	23 13.4	20 46 9.69	19 48 15.4	6.7	2.5	0.18	30	1 11.3	1 45 39.91	13 34 12.9	9.7	3.7	0.24
13	23 16.0	20 52 41.60	19 26 35.5	6.6	2.5	0.17	31	1 11.0	1 49 20.39	14 3 54.7	10.0	3.8	0.25
14	23 18.6	20 59 15.01	−19 3 33.9	6.6	2.5	0.17	32	1 10.4	1 52 38.13	+14 30 22.9	10.3	3.9	0.26
15	23 21.3	21 5 49.85	−18 39 10.3	6.6	2.5	0.17	33	1 9.4	1 55 32.46	+14 53 32.1	10 6	4.0	0.27

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Apr. 1	1 10.4	1 52 38.13	+14 30 22.9	10.3	3.9	0.26	May 16	22 19.6	2 2 50.63	+ 8 54 19.4	10.8	4.0	0.27
2	1 9.4	1 55 32.46	14 53 32.1	10.6	4.0	0.27	17	22 19.5	2 6 38.99	9 15 22.0	10.5	4.0	0.26
3	1 8.0	1 58 2.80	15 13 17.7	11.0	4.1	0.28	18	22 19.6	2 10 38.70	9 37 54.3	10.3	3.9	0.26
4	1 6.1	2 0 8.74	15 29 35.8	11.3	4.3	0.29	19	22 19.9	2 14 49.58	10 1 51.2	10.1	3.8	0.25
5	1 3.8	2 1 50.07	15 42 23.2	11.6	4.4	0.30	20	22 20.3	2 19 11.51	10 27 7.5	9.9	3.8	0.25
6	1 1.2	2 3 6.75	+15 51 37.8	12.0	4.5	0.31	21	22 20.8	2 23 44.35	+10 53 38.1	9.7	3.7	0.24
7	0 58.1	2 3 58.95	15 57 18.4	12.3	4.6	0.32	22	22 21.6	2 28 28.10	11 21 18.2	9.6	3.6	0.24
8	0 54.6	2 4 27.09	15 59 24.4	12.6	4.8	0.32	23	22 22.6	2 33 22.75	11 50 2.6	9.4	3.5	0.23
9	0 50.8	2 4 31.77	15 57 56.9	13.0	4.9	0.33	24	22 23.8	2 38 28.30	12 19 46.2	9.2	3.5	0.23
10	0 46.6	2 4 13.93	15 52 58.4	13.3	5.0	0.34	25	22 25.1	2 43 44.80	12 50 23.7	9.0	3.4	0.23
11	0 42.0	2 3 34.79	+15 44 33.6	13.6	5.1	0.35	26	22 26.6	2 49 12.38	+13 21 50.3	8.9	3.3	0.22
12	0 37.1	2 2 35.82	15 32 48.8	13.9	5.2	0.36	27	22 28.3	2 54 51.18	13 54 0.4	8.7	3.3	0.22
13	0 31.9	2 1 18.75	15 17 53.0	14.2	5.4	0.36	28	22 30.2	3 0 41.34	14 26 48.3	8.6	3.2	0.22
14	0 26.4	1 59 45.63	14 59 57.9	14.5	5.5	0.37	29	22 32.2	3 6 43.03	15 0 8.2	8.4	3.2	0.21
15	0 20.6	1 57 58.70	14 39 17.6	14.7	5.6	0.38	30	22 34.5	3 12 56.47	15 33 54.0	8.3	3.1	0.21
16	0 14.7	1 56 0.46	+14 16 9.0	14.9	5.6	0.38	31	22 37.0	3 19 21.87	+16 7 59.2	8.1	3.0	0.21
17	0 8.7	1 53 53.55	13 50 52.0	15.1	5.7	0.39	June 1	22 39.7	3 25 59.44	16 42 16.9	8.0	3.0	0.20
17	0 2.6	1 51 40.69	13 23 48.6	15 2	5.8	0.39	2	22 42.6	3 32 49.40	17 16 40.0	7.8	2.9	0.20
18	23 56.4	1 49 24.62	12 55 21.9	15.4	5.8	0.40	3	22 45.7	3 39 51.97	17 51 0.3	7.7	2.9	0.20
19	23 50.2	1 47 8.10	12 25 57.1	15.5	5.9	0.40	4	22 49.0	3 47 7.35	18 25 9.5	7.6	2.9	0.20
20	23 44.0	1 44 53.78	+11 56 0.0	15.6	5.9	0.40	5	22 52.5	3 54 35.67	+18 58 58.4	7.5	2.8	0.20
21	23 37.9	1 42 44.17	11 25 56.3	15.6	5.8	0.40	6	22 56.2	4 2 16.99	19 32 17.4	7.4	2.8	0.19
22	23 31.9	1 40 41.60	10 56 11.2	15.5	5.8	0.39	7	23 0.2	4 10 11.32	20 4 56.1	7.3	2.7	0.19
23	23 26.1	1 38 48.13	10 27 8.4	15.5	5.8	0.39	8	23 4.4	4 18 18.60	20 36 43.6	7.2	2.7	0.19
24	23 20.5	1 37 5.60	9 59 9.4	15.4	5.8	0.39	9	23 8.8	4 26 38.58	21 7 28.3	7.1	2.7	0.19
25	23 15.1	1 35 35.57	+ 9 32 34.4	15.3	5.7	0.39	10	23 13.3	4 35 10.93	+21 36 58.1	7.0	2.7	0.19
26	23 9.9	1 34 19.30	9 7 40.9	15.2	5.7	0.38	11	23 18.1	4 43 55.14	22 5 0.9	6.9	2.6	0.19
27	23 4.9	1 33 17.81	8 44 43.2	15.0	5.6	0.38	12	23 23.1	4 52 50.51	22 31 24.3	6.9	2.6	0.18
28	23 0.2	1 32 31.85	8 23 53.2	14.9	5.6	0.37	13	23 28.3	5 1 56.21	22 55 55.6	6.8	2.6	0.18
29	22 55.8	1 32 1.96	8 5 20.4	14.7	5.5	0.37	14	23 33.6	5 11 11.18	23 18 23.2	6.8	2.6	0.18
30	22 51.6	1 31 48.45	+ 7 49 11.8	14.5	5.4	0.36	15	23 39.0	5 20 34.19	+23 38 35.9	6.8	2.6	0.18
May 1	22 47.7	1 31 51.39	7 35 31.9	14.2	5.3	0.36	16	23 44.5	5 30 3.87	23 56 23.6	6.7	2.5	0.18
2	22 44.1	1 32 10.84	7 24 23.8	13.9	5.3	0.35	17	23 50.1	5 39 38.68	24 11 37.5	6.7	2.5	0.18
3	22 40.8	1 32 46.81	7 15 48.7	13.7	5.2	0.35	19	23 55.8	5 49 17.01	24 24 10.3	6.7	2.5	0.18
4	22 37.7	1 33 39.05	7 9 45.9	13.5	5.1	0.34	20	0 1.5	5 58 57.23	24 33 56.7	6.7	2.5	0.18
5	22 34.9	1 34 47.13	+ 7 6 13.5	13.3	5.0	0.33	21	0 7.2	6 8 37.61	+24 40 53.2	6.7	2.5	0.18
6	22 32.4	1 36 10.68	7 5 9.0	13.0	5.0	0.33	22	0 12.9	6 18 16.50	24 44 58.1	6.7	2.5	0.18
7	22 30.1	1 37 49.35	7 6 29.5	12.8	4.9	0.32	23	0 18.5	6 27 52.31	24 46 11.8	6.7	2.5	0.18
8	22 28.1	1 39 42.71	7 10 11.0	12.5	4.8	0.32	24	0 24.1	6 37 23.57	24 44 36.6	6.7	2.5	0.18
9	22 26.2	1 41 50.36	7 16 8.7	12.3	4.7	0.31	25	0 29.6	6 46 48.92	24 40 15.9	6.7	2.5	0.18
10	22 24.7	1 44 11.89	+ 7 24 17.5	12.1	4.6	0.31	26	0 35.0	6 56 7.14	+24 33 14.6	6.8	2.5	0.18
11	22 23.3	1 46 46.86	7 34 32.5	11.9	4.5	0.30	27	0 40.2	7 5 17.18	24 23 38.9	6.8	2.6	0.18
12	22 22.2	1 49 34.88	7 46 48.8	11.6	4.4	0.29	28	0 45.2	7 14 18.14	24 11 36.0	6.9	2.6	0.18
13	22 21.3	1 52 35.59	8 1 0.9	11.4	4.3	0.29	29	0 50.0	7 23 9.29	23 57 13.4	6.9	2.6	0.18
14	22 20.6	1 55 48.66	8 17 3.4	11.2	4.2	0.28	30	0 54.8	7 31 50.00	23 40 38.8	7.0	2.6	0.18
15	22 20.0	1 59 13.77	+ 8 34 51.3	11.0	4.1	0.28	31	0 59.4	7 40 19.83	+23 22 1.0	7.0	2.6	0.18
16	22 19.6	2 2 50.63	+ 8 54 19.4	10.8	4.0	0.27	32	1 3.7	7 48 38.43	+23 1 28.2	7.1	2.7	0.19

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
July 1	0 59.4	7 40 19.83	+23 22 1.0	7.0	2.6	0.18	Aug. 16	0 58.1	10 40 30.62	+ 3 32 7.1	13.6	5.1	0.36
2	1 3.7	7 48 38.43	23 1 28.2	7.1	2.7	0.19	17	0 52.4	10 38 42.36	3 37 57.6	13.8	5.2	0.36
3	1 7.9	7 56 45.57	22 39 8.6	7.1	2.7	0.19	18	0 46.4	10 36 36.40	3 47 0.5	14.0	5.3	0.36
4	1 11.9	8 4 41.10	22 15 10.6	7.2	2.7	0.19	19	0 40.1	10 34 13.95	3 59 16.0	14.1	5.3	0.35
5	1 15.6	8 12 24.92	21 49 42.1	7.3	2.7	0.19	20	0 33.6	10 31 36.66	4 14 40.9	14.1	5.3	0.35
6	1 19.1	8 19 57.00	+21 22 50.9	7.4	2.8	0.20	21	0 26.8	10 28 46.61	+ 4 33 8.0	14.2	5.4	0.35
7	1 22.5	8 27 17.39	20 54 44.7	7.4	2.8	0.20	22	0 19.8	10 25 46.31	4 54 26.3	14.3	5.4	0.34
8	1 25.7	8 34 26.18	20 25 30.7	7.5	2.9	0.20	23	0 12.8	10 22 38.72	5 18 20.2	14.3	5.4	0.34
9	1 28.7	8 41 23.43	19 55 15.7	7.6	2.9	0.20	24	0 5.7	10 19 27.23	5 44 30.5	14.2	5.4	0.33
10	1 31.5	8 48 9.29	19 24 6.2	7.7	2.9	0.21	24	23 58.6	10 16 15.50	6 12 33.7	14.1	5.3	0.33
11	1 34.2	8 54 43.86	+18 52 8.6	7.8	3.0	0.21	25	23 51.5	10 13 7.48	+ 6 42 2.4	14.0	5.3	0.32
12	1 36.6	9 1 7.29	18 19 29.0	7.9	3.0	0.21	26	23 44.6	10 10 7.26	7 12 26.9	13.9	5.2	0.32
13	1 38.9	9 7 19.70	17 46 13.3	8.0	3.0	0.22	27	23 37.8	10 7 18.97	7 43 15.7	13.7	5.2	0.31
14	1 41.0	9 13 21.23	17 12 27.1	8.1	3.1	0.22	28	23 31.3	10 4 46.61	8 13 56.2	13.5	5.1	0.30
15	1 42.9	9 19 12.01	16 38 15.7	8.2	3.1	0.22	29	23 25.2	10 2 33.98	8 43 56.0	13.2	5.0	0.30
16	1 44.6	9 24 52.12	+16 3 44.3	8.3	3.1	0.22	30	23 19.5	10 0 44.54	+ 9 12 43.8	12.9	4.9	0.29
17	1 46.1	9 30 21.66	15 28 57.8	8.5	3.2	0.23	31	23 14.2	9 59 21.31	9 39 50.2	12.6	4.8	0.28
18	1 47.5	9 35 40.70	14 54 1.3	8.6	3.2	0.23	Sept. 1	23 9.3	9 58 26.85	10 4 48.1	12.3	4.7	0.27
19	1 48.7	9 40 49.27	14 18 59.5	8.7	3.3	0.23	2	23 5.0	9 58 3.18	10 27 13.1	12.0	4.6	0.26
20	1 49.7	9 45 47.41	13 43 57.3	8.8	3.3	0.23	3	23 1.2	9 58 11.77	10 46 44.4	11.6	4.5	0.26
21	1 50.6	9 50 35.10	+13 8 59.4	9.0	3.4	0.24	4	22 58.1	9 58 53.53	+11 3 4.0	11.3	4.3	0.25
22	1 51.2	9 55 12.30	12 34 10.3	9.1	3.4	0.24	5	22 55.4	10 0 8.84	11 15 57.2	10.9	4.2	0.24
23	1 51.7	9 59 38.96	11 59 34.7	9.3	3.5	0.25	6	22 53.2	10 1 57.52	11 25 12.4	10.6	4.0	0.23
24	1 52.0	10 3 54.99	11 25 17.5	9.4	3.5	0.25	7	22 51.6	10 4 18.95	11 30 40.9	10.3	3.9	0.23
25	1 52.2	10 8 0.24	10 51 23.5	9.6	3.6	0.25	8	22 50.6	10 7 12.06	11 32 17.6	10.0	3.8	0.22
26	1 52.2	10 11 54.55	+10 17 57.7	9.7	3.6	0.26	9	22 50.0	10 10 35.41	+11 29 59.3	9.7	3.7	0.21
27	1 52.0	10 15 37.71	9 45 5.2	9.9	3.7	0.26	10	22 49.9	10 14 27.20	11 23 46.5	9.4	3.6	0.21
28	1 51.6	10 19 9.47	9 12 51.0	10.0	3.7	0.27	11	22 50.3	10 18 45.39	11 13 41.9	9.1	3.5	0.20
29	1 51.0	10 22 29.53	8 41 20.6	10.2	3.8	0.27	12	22 51.1	10 23 27.70	10 59 50.5	8.9	3.4	0.20
30	1 50.2	10 25 37.58	8 10 39.7	10.4	3.9	0.28	13	22 52.2	10 28 31.72	10 42 20.3	8.6	3.3	0.19
31	1 49.2	10 28 33.26	+ 7 40 54.2	10.5	3.9	0.28	14	22 53.6	10 33 54.97	+10 21 21.0	8.4	3.2	0.19
Aug. 1	1 47.9	10 31 16.16	7 12 10.3	10.7	4.0	0.29	15	22 55.3	10 39 34.99	9 57 3.9	8.2	3.1	0.18
2	1 46.5	10 33 45.81	6 44 34.6	10.9	4.1	0.29	16	22 57.3	10 45 29.28	9 29 42.5	8.0	3.0	0.18
3	1 44.8	10 36 1.73	6 18 14.1	11.1	4.2	0.30	17	22 59.5	10 51 35.52	8 59 30.7	7.8	2.9	0.18
4	1 42.9	10 38 3.40	5 53 15.9	11.3	4.3	0.30	18	23 1.8	10 57 51.52	8 26 43.4	7.7	2.9	0.17
5	1 40.8	10 39 50.29	+ 5 29 47.7	11.5	4.3	0.31	19	23 4.2	11 4 15.27	+ 7 51 36.2	7.5	2.8	0.17
6	1 38.4	10 41 21.78	5 7 57.5	11.7	4.4	0.32	20	23 6.7	11 10 44.94	7 14 24.2	7.4	2.8	0.17
7	1 35.7	10 42 37.29	4 47 53.5	11.9	4.5	0.32	21	23 9.4	11 17 18.91	6 35 22.4	7.2	2.7	0.17
8	1 32.7	10 43 36.21	4 29 44.7	12.1	4.6	0.33	22	23 12.1	11 23 55.78	5 54 45.2	7.1	2.7	0.17
9	1 29.5	10 44 17.95	4 13 40.3	12.3	4.7	0.33	23	23 14.8	11 30 34.35	5 12 46.5	7.0	2.7	0.17
10	1 25.9	10 44 41.92	+ 3 59 49.6	12.5	4.7	0.34	24	23 17.5	11 37 13.65	+ 4 29 39.0	6.9	2.6	0.16
11	1 22.0	10 44 47.61	3 48 22.1	12.7	4.8	0.34	25	23 20.2	11 43 52.82	3 45 34.5	6.8	2.6	0.16
12	1 17.9	10 44 34.57	3 39 27.1	12.9	4.9	0.35	26	23 22.9	11 50 31.22	3 0 43.8	6.7	2.5	0.16
13	1 13.5	10 44 2.45	3 33 13.8	13.1	4.9	0.35	27	23 25.5	11 57 8.32	2 15 17.0	6.7	2.5	0.16
14	1 8.7	10 43 11.05	3 29 50.9	13.3	5.0	0.35	28	23 28.2	12 3 43.73	1 29 23.1	6.6	2.5	0.15
15	1 3.6	10 42 0.37	+ 3 29 26.6	13.5	5.1	0.35	29	23 30.8	12 10 17.16	+ 0 43 10.1	6.6	2.5	0.15
16	0 58.1	10 40 30.62	+ 3 32 7.1	13.6	5.1	0.36	30	23 33.3	12 16 48.41	− 0 3 14.6	6.5	2.5	0.15

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	23 35.8	12 23 17.35	− 0 49 44.9	6.4	2.4	0.15	Nov. 17	1 12.8	17 1 56.15	−25 20 48.2	7.8	2.9	0.23
2	23 38.3	12 29 43.93	1 36 15.0	6.4	2.4	0.15	18	1 14.4	17 7 23.93	25 28 15.5	8.0	3.0	0.24
3	23 40.8	12 36 8.14	2 22 39.5	6.4	2.4	0.15	19	1 15.8	17 12 43.58	25 34 16.3	8.1	3.0	0.24
4	23 43.2	12 42 30.02	3 8 53.9	6.4	2.4	0.15	20	1 17.0	17 17 53.75	25 38 49.4	8.3	3.1	0.25
5	23 45.6	12 48 49.62	3 54 54.3	6.3	2.4	0.15	21	1 18.0	17 22 52.86	25 41 54.0	8.4	3.2	0.26
6	23 47.9	12 55 7.04	− 4 40 37.1	6.3	2.4	0.15	22	1 18.9	17 27 39.15	−25 43 28.7	8.6	3.2	0.26
7	23 50.2	13 1 22.38	5 25 59.0	6.3	2.4	0.15	23	1 19.5	17 32 10.63	25 43 33.2	8.8	3.3	0.27
8	23 52.5	13 7 35.78	6 10 56.9	6.3	2.4	0.15	24	1 19.8	17 36 25.08	25 42 6.6	9 0	3.4	0.28
9	22 54.8	13 13 47.38	6 55 28.6	6.3	2.4	0.15	25	1 19.8	17 40 20.03	25 39 9.0	9.2	3.5	0.28
10	23 57.0	13 19 57.32	7 39 31.6	6.2	2.4	0.15	26	1 19.3	17 43 52.73	25 34 40.1	9.4	3.6	0.29
11	23 59.2	13 26 5.75	− 8 23 3.6	6.2	2.3	0.15	27	1 18.5	17 47 0.18	−25 28 39.8	9.6	3.7	0.30
13	0 1.3	13 32 12.81	9 6 2.8	6.2	2.3	0.15	28	1 17.2	17 49 39.21	25 21 8.3	9.9	3.8	0.31
14	0 3.4	13 38 18.66	9 48 27.3	6.2	2.3	0.15	29	1 15.4	17 51 46.39	25 12 5.7	10.1	3.9	0.31
15	0 5.6	13 44 23.45	10 30 15.5	6.2	2.3	0.16	30	1 12.9	17 53 18.14	25 1 32.0	10.4	4.0	0.32
16	0 7.7	13 50 27.32	11 11 25.7	6.2	2.3	0.16	Dec. 1	1 9.9	17 54 10.92	24 49 27.3	10.7	4.1	0.33
17	0 9.8	13 56 30.44	−11 51 56.6	6.2	2.3	0.16	2	1 6.2	17 54 21.45	−24 35 51.9	11.0	4.2	0.33
18	0 11.9	14 2 32.92	12 31 46.6	6.2	2.3	0.16	3	1 1.7	17 53 46.74	24 20 46.1	11.3	4.3	0.34
19	0 14.0	14 8 31.91	13 10 54.4	6.2	2.3	0.16	4	0 56.4	17 52 24.71	24 4 10.1	11.6	4.4	0.34
20	0 16.0	14 14 36.51	13 49 18.8	6.2	2.3	0.16	5	0 50.3	17 50 14.13	23 46 5.0	11.9	4.5	0.35
21	0 18.1	14 20 37.86	14 26 58.4	6.2	2.3	0.16	6	0 43.4	17 47 15.41	23 26 34.0	12.2	4.6	0.35
22	0 20.2	14 26 39.04	−15 3 51.9	6.2	2.4	0.16	7	0 35.7	17 43 30.75	−23 5 42.6	12.4	4.6	0.35
23	0 22.3	14 32 40.17	15 39 58.0	6.3	2.4	0.16	8	0 27.4	17 39 4.50	22 43 40.4	12.6	4.7	0.34
24	0 24.3	14 38 41.33	16 15 15.7	6.3	2.4	0.16	9	0 18.5	17 34 3.25	22 20 41.8	12.7	4.7	0.34
25	0 26 4	14 44 42.60	16 49 43.5	6.3	2.4	0.17	10	0 9.1	17 28 35.68	21 57 8.8	12.9	4.8	0.33
26	0 28.5	14 50 44.05	17 23 20.3	6.4	2.4	0.17	10	23 59.4	17 22 52.20	21 33 29.0	13.0	4.9	0.33
27	0 30.6	14 56 45.73	−17 56 4.8	6.4	2.4	0.17	11	23 49.7	17 17 4.11	−21 10 15.1	13.0	4.9	0.32
28	0 32.6	15 2 47.68	18 27 55.7	6.4	2.4	0.17	12	23 40.0	17 11 22.95	20 48 3.2	12.9	4.8	0.31
29	0 34.7	15 8 49.91	18 58 51.7	6.5	2.4	0.17	13	23 30.7	17 5 59.58	20 27 30.0	12.8	4.8	0.31
30	0 36.8	15 14 52.45	19 28 51.5	6.5	2.4	0.18	14	23 21.9	17 1 3.39	20 9 9.4	12.6	4.7	0.30
31	0 38.9	15 20 55.28	19 57 53.7	6.6	2.5	0.18	15	23 13.6	16 56 41.92	19 53 27.9	12 5	4.7	0.29
Nov. 1	0 41.0	15 26 58.35	−20 25 57.1	6.6	2.5	0.18	16	23 6.0	16 53 0.44	−19 40 44.4	12.3	4.6	0.29
2	0 43.1	15 33 1.63	20 53 0.1	6.6	2.5	0.18	17	22 59.1	16 50 2.16	19 31 10.5	12.0	4.5	0.28
3	0 45.2	15 39 5.04	21 19 1.4	6.7	2.5	0.18	18	22 52.7	16 47 48.50	19 24 48.8	11.8	4.4	0.27
4	0 47.3	15 45 8.48	21 43 59.4	6.7	2.6	0.19	19	22 47.5	16 46 19.27	19 21 34.1	11.5	4.3	0.27
5	0 49.5	15 51 11.84	22 7 52.8	6.8	2.6	0.19	20	22 42.8	16 45 33.09	19 21 15.8	11.2	4.2	0.26
6	0 51.6	15 57 14.92	−22 30 39.9	6.8	2.6	0.19	21	22 38.8	16 45 27.76	−19 23 39.5	10.9	4.1	0.25
7	0 53.7	16 3 17.53	22 52 19.3	6.9	2.6	0.20	22	22 35.4	16 46 0.72	19 28 28.0	10.7	4.0	0.25
8	0 55.8	16 9 19.41	23 12 49.3	7.0	2.6	0.20	23	22 32.6	16 47 9.04	19 35 23.0	10.4	3.9	0.24
9	0 57.8	16 15 20.30	23 32 8.2	7.0	2.7	0.20	24	22 30.3	16 48 49.76	19 44 5.7	10.1	3.8	0.24
10	0 59.9	16 21 19.86	23 50 14.6	7.1	2.7	0.21	25	22 28.6	16 50 59.82	19 54 17.9	9.8	3.7	0.23
11	1 1.9	16 27 17.67	−24 7 6.7	7.2	2.7	0.21	26	22 27.3	16 53 36.58	−20 5 42.4	9.6	3.6	0.23
12	1 3.9	16 33 13.26	24 22 42.8	7.3	2.7	0.21	27	22 26.4	16 56 37.40	20 18 2.7	9.4	3.5	0.22
13	1 5.8	16 39 6.11	24 37 1.3	7.4	2.8	0.22	28	22 25.8	16 59 59.87	20 31 4.3	9.2	3.5	0.22
14	1 7.7	16 44 55.58	24 50 0.6	7.5	2.8	0.22	29	22 25.6	17 3 41.84	20 44 33.7	9.0	3.4	0.22
15	1 9.5	16 50 40.97	25 1 39.3	7.6	2.9	0.23	30	22 25.6	17 7 41.38	20 58 18.4	8.8	3.3	0.21
16	1 11.2	16 56 21.47	−25 11 55.6	7.7	2.9	0.23	31	22 25.9	17 11 56.71	−21 12 8.0	8.6	3.2	0.21
17	1 12 8	17 1 56.15	−25 20 48.2	7.8	2.9	0.23	32	22 26.4	17 16 26.28	−21 25 52.6	8.4	3.2	0.21

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem Pass Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	1 53.4	20 33 3.35	−20 31 53.8	6.0	5.8	0.41	Feb. 15	2 27.8	0 8 51.37	+ 0 11 22.3	7.1	6.9	0.46
1	1 54.6	20 38 12.41	20 13 39.9	6.0	5.8	0.41	16	2 28.2	0 13 13.09	0 42 55.2	7.2	6.9	0.46
2	1 55.8	20 43 20.11	19 54 51.1	6.0	5.8	0.41	17	2 28.6	0 17 34.54	1 14 27.5	7.2	6.9	0.46
3	1 56.9	20 48 26.44	19 35 28.3	6.1	5.9	0.41	18	2 29.0	0 21 55.75	1 45 58.7	7.2	7.0	0.47
4	1 58.1	20 53 31.41	19 15 32.2	6.1	5.9	0.41	19	2 29.4	0 26 16.77	2 17 27.9	7.3	7.0	0.47
5	1 59.2	20 58 34.98	−18 55 3.5	6.1	5.9	0.41	20	2 29.8	0 30 37.62	+ 2 48 54.6	7.3	7.0	0.47
6	2 0.3	21 3 37.16	18 34 3.0	6.1	5.9	0.41	21	2 30.2	0 34 58.36	3 20 18.0	7.3	7.1	0.47
7	2 1.4	21 8 37.94	18 12 31.4	6.1	5.9	0.41	22	2 30.6	0 39 19.02	3 51 37.5	7.4	7.1	0.47
8	2 2.4	21 13 37.31	17 50 29.5	6.2	6.0	0.42	23	2 31.0	0 43 39.63	4 22 52 2	7.4	7.2	0.48
9	2 3.4	21 18 35.26	17 27 58.1	6.2	6.0	0.42	24	2 31.4	0 48 0.22	4 54 1.5	7.4	7.2	0.48
10	2 4.4	21 23 31.82	−17 4 58.0	6.2	6.0	0.42	25	2 31.8	0 52 20.84	+ 5 25 4.7	7.5	7.2	0.48
11	2 5.4	21 28 26.98	16 41 30.0	6.2	6.0	0.42	26	2 32.2	0 56 41.52	5 56 1.2	7.5	7.3	0.49
12	2 6.3	21 33 20.74	16 17 34.9	6.2	6.0	0.42	27	2 32.6	1 1 2.28	6 26 50.1	7.6	7.3	0.49
13	2 7.2	21 38 13.13	15 53 13.5	6.2	6.0	0.42	28	2 33.0	1 5 23.15	6 57 30.8	7.6	7.3	0.49
14	2 8.1	21 43 4.16	15 28 26.5	6.3	6.1	0.42	29	2 33.4	1 9 44.18	7 28 2.6	7.7	7.4	0.50
15	2 9.0	21 47 53.84	−15 3 14.7	6.3	6.1	0.42	Mar. 1	2 33.8	1 14 5.38	+ 7 58 24.7	7.7	7.4	0.50
16	2 9.9	21 52 42.19	14 37 39.0	6.3	6.1	0.42	2	2 34.2	1 18 26.79	8 28 36.3	7.7	7.5	0.50
17	2 10.8	21 57 29.23	14 11 40.1	6.3	6.1	0.42	3	2 34.6	1 22 48.42	8 58 36.8	7.8	7.5	0.51
18	2 11.6	22 2 14.99	13 45 18.8	6.3	6.1	0.42	4	2 35.1	1 27 10.31	9 28 25.4	7.8	7.5	0.51
19	2 12.4	22 6 59.49	13 18 35.9	6.4	6.2	0.42	5	2 35.5	1 31 32.48	9 58 1.4	7.9	7.6	0.51
20	2 13.2	22 11 42.75	−12 51 32.1	6.4	6.2	0.42	6	2 35.9	1 35 54.94	+10 27 24.1	7.9	7.6	0.52
21	2 14.0	22 16 24.79	12 24 8.3	6.4	6.2	0.42	7	2 36.4	1 40 17.73	10 56 32.8	8.0	7.7	0.52
22	2 14.7	22 21 5.65	11 56 25.2	6.4	6.2	0.42	8	2 36.8	1 44 40.87	11 25 26.8	8.0	7.7	0.53
23	2 15.3	22 25 45.35	11 28 23.6	6.5	6.2	0.42	9	2 37.3	1 49 4.38	11 54 5.5	8.1	7.8	0.53
24	2 16 0	22 30 23.92	11 0 4.3	6.5	6.3	0.43	10	2 37.7	1 53 28.28	12 22 28.1	8.1	7.8	0.54
25	2 16.7	22 35 1.39	−10 31 28.0	6.5	6.3	0.43	11	2 38.2	1 57 52.59	+12 50 33.8	8.2	7.9	0.54
26	2 17.4	22 39 37.80	10 2 35.6	6.5	6.3	0.43	12	2 38.6	2 2 17.31	13 18 22.1	8.2	7.9	0.54
27	2 18.1	22 44 13.18	9 33 27.7	6 6	6.3	0.43	13	2 39.1	2 6 42.49	13 45 52.3	8.3	8.0	0.55
28	2 18.7	22 48 47.54	9 4 5.3	6.6	6.4	0.43	14	2 39.6	2 11 8.13	14 13 3.7	8.3	8.0	0.55
29	2 19.3	22 53 20.92	8 34 29.1	6.6	6.4	0.43	15	2 40.1	2 15 34.25	14 39 55.7	8.4	8.1	0.56
30	2 19.9	22 57 53.35	− 8 4 39.9	6.6	6.4	0.43	16	2 40.6	2 20 0.85	+15 6 27.7	8.4	8.1	0.56
31	2 20.5	23 2 24.86	7 34 38.6	6.7	6.4	0.43	17	2 41.1	2 24 27.96	15 32 38.8	8.5	8.2	0.57
Feb. 1	2 21.0	23 6 55.48	7 4 25.8	6.7	6.5	0.43	18	2 41.6	2 28 55.59	15 58 28.6	8 5	8.2	0.57
2	2 21.6	23 11 25.26	6 34 2.3	6.7	6.5	0.43	19	2 42.1	2 33 23.75	16 23 56.4	8.6	8.3	0.58
3	2 22.1	23 15 54.22	6 3 29.0	6.7	6.5	0.44	20	2 42.7	2 37 52.43	16 49 1.7	8.6	8.4	0.58
4	2 22.6	23 20 22.41	− 5 32 46.6	6.8	6.5	0.44	21	2 43.2	2 42 21.65	+17 13 43.8	8.7	8.4	0.59
5	2 23.1	23 24 49.85	5 1 55.8	6.8	6.6	0.44	22	2 43.8	2 46 51.41	17 38 1.9	8.8	8.5	0.59
6	2 23.6	23 29 16.58	4 30 57.6	6.8	6.6	0.44	23	2 44.2	2 51 21.70	18 1 55.5	8.8	8.5	0.60
7	2 24.1	23 33 42.64	3 59 52.5	6.9	6.6	0.44	24	2 44.9	2 55 52.52	18 25 24.2	8.9	8.6	0.61
8	2 24.6	23 38 8.05	3 28 41.5	6.9	6.7	0.45	25	2 45.4	3 0 23.87	18 48 27.1	9.0	8.7	0.61
9	2 25.1	23 42 32.86	− 2 57 25.2	6.9	6.7	0.45	26	2 46.0	3 4 55.75	+19 11 3.8	9.0	8.7	0.62
10	2 25.6	23 46 57.12	2 26 4.4	7.0	6.7	0.45	27	2 46.6	3 9 28.12	19 33 13.5	9.1	8.8	0.62
11	2 26.0	23 51 20.85	1 54 39.8	7.0	6.8	0.45	28	2 47.2	3 14 0.96	19 54 55.7	9.2	8.8	0.63
12	2 26.5	23 55 44.11	1 23 12.0	7.0	6.8	0.45	29	2 47.8	3 18 34.26	20 16 9.9	9.2	8.9	0.64
13	2 26.9	0 0 6.92	0 51 42.0	7.1	6.8	0.46	30	2 48.4	3 23 8.01	20 36 55.5	9.3	9.0	0.64
14	2 27.4	0 4 29.32	− 0 20 10.3	7.1	6.8	0.46	31	2 49.0	3 27 42.17	+20 57 11.9	9.4	9.0	0.65
15	2 27.8	0 8 51.37	+ 0 11 22.3	7.1	6.9	0.46	32	2 49.7	3 32 16.70	+21 16 58.6	9.5	9.1	0.65

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Apr. 1	2 49.7	3 32 16.70	+21 16 58.6	9.5	9.1	0.65	May 17	3 7.3	6 51 12.70	+26 18 30.6	15.4	14.9	1.10
2	2 50.3	3 36 51.58	21 36 14.9	9.5	9.2	0.66	18	3 6.8	6 54 40.96	26 12 30.2	15.7	15.1	1.12
3	2 51.0	3 41 26.76	21 55 0.4	9.6	9.3	0.67	19	3 6.3	6 58 5.06	26 6 5.5	15.9	15.3	1.13
4	2 51.6	3 46 2.21	22 13 14.5	9.7	9.4	0.67	20	3 5.7	7 1 24.86	25 59 17.4	16.1	15.5	1.15
5	2 52.3	3 50 37.87	22 30 56.9	9.8	9.4	0.68	21	3 5.0	7 4 40.19	25 52 6.6	16.3	15.8	1.16
6	2 52.9	3 55 13.72	+22 48 7.0	9.9	9.5	0.69	22	3 4.3	7 7 50.90	+25 44 34.2	16.5	16.0	1.18
7	2 53.6	3 59 49.70	23 4 44.5	9.9	9.6	0.70	23	3 3.4	7 10 56.83	25 36 40.9	16.8	16.3	1.19
8	2 54.2	4 4 25.76	23 20 48.9	10.0	9.7	0.70	24	3 2.5	7 13 57.80	25 28 27.5	17.0	16.5	1.21
9	2 54.9	4 9 1.86	23 36 19.9	10.1	9.8	0.71	25	3 1.5	7 16 53.65	25 19 55.0	17.3	16.7	1.23
10	2 55.5	4 13 37.93	23 51 17.1	10.2	9.8	0.72	26	3 0.4	7 19 44.18	25 11 4.5	17.6	16.9	1.25
11	2 56.2	4 18 13.92	+24 5 40.3	10.3	9.9	0.73	27	2 59.1	7 22 29.22	+25 1 56.8	17.8	17.2	1.27
12	2 56.8	4 22 49.77	24 19 29.2	10.4	10.0	0.74	28	2 57.8	7 25 8.56	24 52 32.9	18.1	17.4	1.28
13	2 57.5	4 27 25.40	24 32 43.4	10.5	10.1	0.74	29	2 56.5	7 27 42.00	24 42 54.0	18.4	17.7	1.30
14	2 58.1	4 32 0.77	24 45 22.8	10.6	10.2	0.75	30	2 55.1	7 30 9.34	24 33 1.0	18.7	18.0	1.32
15	2 58.8	4 36 35.80	24 57 26.9	10.7	10.3	0.76	31	2 53.5	7 32 30.36	24 22 54.7	19.0	18.3	1.34
16	2 59.4	4 41 10.44	+25 8 55.6	10.8	10.4	0.77	June 1	2 51.7	7 34 44.84	+24 12 36.4	19.3	18.6	1.36
17	3 0.1	4 45 44.63	25 19 48.8	10.9	10.5	0.78	2	2 49.9	7 36 52.57	24 2 7.1	19.6	18.9	1.38
18	3 0.7	4 50 18.27	25 30 6.4	11.0	10.6	0.78	3	2 48.0	7 38 53.34	23 51 27.8	19.9	19.2	1.40
19	3 1.3	4 54 51.30	25 39 48.3	11.1	10.7	0.79	4	2 45.9	7 40 46.91	23 40 39.8	20.2	19.5	1.42
20	3 1.9	4 59 23.63	25 48 54.4	11.2	10.8	0.80	5	2 43.6	7 42 33.04	23 29 44.0	20.5	19.8	1.44
21	3 2.5	5 3 55.17	+25 57 24.7	11.3	11.0	0.81	6	2 41.3	7 44 11.52	+23 18 41.4	20.9	20.1	1.46
22	3 3.1	5 8 25.84	26 5 49.2	11.4	11.1	0.82	7	2 38.9	7 45 42.13	23 7 33.1	21.2	20.5	1.48
23	3 3.6	5 12 55.54	26 12 37.9	11.6	11.2	0.83	8	2 36.5	7 47 4.63	22 56 20.0	21.6	20.8	1.50
24	3 4.1	5 17 24.19	26 19 20.6	11.7	11.3	0.84	9	2 33.8	7 48 18.82	22 45 3.2	21.9	21.1	1.52
25	3 4.6	5 21 51.70	26 25 27.6	11.8	11.4	0.85	10	2 31.0	7 49 24.45	22 33 43.7	22.2	21.5	1.55
26	3 5.1	5 26 17.96	+26 30 59.0	11.9	11.5	0.86	11	2 28.0	7 50 21.32	+22 22 22.5	22.6	21.8	1.57
27	3 5.6	5 30 42.86	26 35 54.9	12.1	11.6	0.87	12	2 24.8	7 51 9.23	22 11 0.7	23.0	22.2	1.60
28	3 6.1	5 35 6.30	26 40 15.3	12.2	11.8	0.88	13	2 21.5	7 51 47.98	21 59 39.2	23.3	22.5	1.62
29	3 6.5	5 39 28.18	26 44 0.6	12.3	11.9	0.89	14	2 18.1	7 52 17.40	21 48 18.8	23.7	22.9	1.64
30	3 6.9	5 43 48.37	26 47 10.9	12.5	12.1	0.90	15	2 14.4	7 52 37.32	21 37 0.5	24.1	23.3	1.67
May 1	3 7.3	5 48 6.74	+26 49 46.5	12.6	12.2	0.91	16	2 10.7	7 52 47.58	+21 25 44.9	24.5	23.6	1.69
2	3 7.6	5 52 23.18	26 51 47.7	12.8	12.3	0.92	17	2 6.7	7 52 48.03	21 14 32.9	24.8	24.0	1.71
3	3 7.9	5 56 37.57	26 53 15.0	12.9	12.5	0.93	18	2 2.7	7 52 38.56	21 3 25.1	25.2	24.3	1.74
4	3 8.1	6 0 49.78	26 54 8.5	13.0	12.6	0.94	19	1 58.5	7 52 19.07	20 52 22.4	25.6	24.7	1.76
5	3 8.3	6 4 59.69	26 54 28.7	13.2	12.8	0.95	20	1 54.0	7 51 49.52	20 41 25.5	26.0	25.1	1.79
6	3 8.5	6 9 7.17	+26 54 16.1	13.4	12.9	0.96	21	1 49.4	7 51 9.88	+20 30 35.1	26.3	25.4	1.81
7	3 8.6	6 13 12.11	26 53 31.2	13.5	13.1	0.98	22	1 44.6	7 50 20.17	20 19 51.6	26.7	25.8	1.84
8	3 8.7	6 17 14.37	26 52 14.4	13.7	13.2	0.99	23	1 39.7	7 49 20.42	20 9 15.9	27.0	26.1	1.86
9	3 8.8	6 21 13.82	26 50 26.3	13.9	13.4	1.00	24	1 34.7	7 48 10.74	19 58 48.4	27.4	26.5	1.88
10	3 8.8	6 25 10.34	26 48 7.4	14.0	13.6	1.01	25	1 29.4	7 46 51.29	19 48 29.8	27.7	26.8	1.90
11	3 8.8	6 29 3.79	+26 45 18.5	14.2	13.7	1.02	26	1 24.0	7 45 22.30	+19 38 20.4	28.1	27.1	1.92
12	3 8.7	6 32 54.04	26 42 0.2	14.4	13.9	1.04	27	1 18.5	7 43 44.05	19 28 20.9	28.4	27.5	1.94
13	3 8.5	6 36 40.96	26 38 13.1	14.6	14.1	1.05	28	1 12.7	7 41 56.89	19 18 31.7	28.7	27.8	1.96
14	3 8.3	6 40 24.42	26 33 57.8	14.8	14.3	1.06	29	1 6.8	7 40 1.21	19 8 53.5	29.0	28.1	1.98
15	3 8.0	6 44 4.29	26 29 15.2	15.0	14.5	1.08	30	1 0.7	7 37 57.53	18 59 26.8	29.3	28.3	2.00
16	3 7.7	6 47 40.43	+26 24 5.9	15.2	14.7	1.09	31	0 54.6	7 35 46.41	+18 50 12.3	29.5	28.5	2.01
17	3 7.3	6 51 12.70	+26 18 30.6	15.4	14.9	1.10	32	0 48.6	7 33 28.51	+18 41 10.6	29.7	28.7	2.03

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
July 1	0 54.6	7 35 46.41	+18 50 12.3	29.5	28.5	2.01	Aug. 15	21 17.0	6 58 52.06	+17 19 9.5	19.4	18.7	1.31
2	0 48.6	7 33 28.51	18 41 10.6	29.7	28.7	2.03	16	21 15.3	7 1 4.71	17 21 18.3	19.1	18.5	1.29
3	0 42.1	7 31 4.56	18 32 22.4	29.9	28.9	2.04	17	21 13.7	7 3 23.26	17 23 17.9	18.8	18.2	1.27
4	0 35.7	7 28 35.32	18 23 48.4	30.1	29.1	2.05	18	21 12.2	7 5 47.50	17 25 7.0	18.6	17.9	1.25
5	0 29.3	7 26 1.65	18 15 29.3	30.3	29.3	2.05	19	21 10.8	7 8 17.20	17 26 44.5	18.3	17.7	1.23
6	0 22.8	7 23 24.45	+18 7 26.1	30.4	29.4	2.05	20	21 9.4	7 10 52.16	+17 28 9.4	18.1	17.4	1.22
7	0 16.3	7 20 44.67	17 59 39.3	30.4	29.4	2.06	21	21 8.1	7 13 32.18	17 29 20.6	17.8	17.2	1.20
8	0 9.7	7 18 3.31	17 52 9.9	30.5	29.5	2.06	22	21 7.0	7 16 17.05	17 30 17.1	17.5	16.9	1.18
9	0 3.1	7 15 21.40	17 44 58.9	30.5	29.6	2.06	23	21 5.9	7 19 6.57	17 30 57.9	17.3	16.7	1.17
9	23 56.4	7 12 39.89	17 38 7.1	30.4	29.5	2.06	24	21 4.8	7 22 0.58	17 31 21.9	17.0	16.4	1.15
10	23 49.8	7 9 59.82	+17 31 35.6	30.4	29.4	2.05	25	21 3.8	7 24 58.89	+17 31 28.3	16.8	16.2	1.13
11	23 43.2	7 7 22.17	17 25 25.1	30.3	29.3	2.04	26	21 2.9	7 28 1.33	17 31 16.3	16.5	16.0	1.12
12	23 36.7	7 4 47.88	17 19 36.7	30.2	29.2	2.04	27	21 2.1	7 31 7.73	17 30 45.0	16.3	15.8	1.10
13	23 30.2	7 2 17.89	17 14 11.0	30.1	29.1	2.03	28	21 1.3	7 34 17.96	17 29 53.6	16.1	15.6	1.09
14	23 23.9	6 59 53.04	17 9 8.6	30.0	28.9	2.01	29	21 0.7	7 37 31.85	17 28 41.4	15.9	15.4	1.07
15	23 17.7	6 57 34.14	+17 4 30.3	29.8	28.7	2.00	30	21 0.0	7 40 49.26	+17 27 7.7	15.7	15.2	1.06
16	23 11.6	6 55 21.89	17 0 16.4	29.6	28.5	1.98	31	20 59.4	7 44 10.05	17 25 11.9	15.5	14.9	1.04
17	23 5.6	6 53 16.95	16 56 27.6	29.3	28.2	1.97	Sept. 1	20 58.8	7 47 34.09	17 22 53.2	15.3	14.7	1.03
18	22 59.7	6 51 19.88	16 53 4.0	29.0	28.0	1.96	2	20 58.3	7 51 1.25	17 20 11.0	15.1	14.5	1.02
19	22 54.0	6 49 31.19	16 50 5.5	28.7	27.7	1.95	3	20 57.8	7 54 31.40	17 17 4.7	14.9	14.4	1.01
20	22 48.4	6 47 51.31	+16 47 32.2	28.4	27.4	1.93	4	20 57.4	7 58 4.40	+17 13 33.8	14.7	14.2	0.99
21	22 42.9	6 46 20.59	16 45 23.9	28.1	27.1	1.90	5	20 57.0	8 1 40.15	17 9 37.7	14.5	14.0	0.98
22	22 37.7	6 44 59.27	16 43 40.2	27.7	26.8	1.88	6	20 56.7	8 5 18.52	17 5 16.0	14.3	13.8	0.97
23	22 32.5	6 43 47.61	16 42 20.6	27.4	26.5	1.85	7	20 56.5	8 8 59.40	17 0 28.2	14.1	13.7	0.96
24	22 27.5	6 42 45.73	16 41 24.5	27.0	26.1	1.82	8	20 56.3	8 12 42.68	16 55 14.0	14.0	13.5	0.94
25	22 22.8	6 41 53.73	+16 40 51.1	26.7	25.8	1.80	9	20 56.1	8 16 28.25	+16 49 33.0	13.8	13.4	0.93
26	22 18.1	6 41 11.64	16 40 39.3	26.3	25.4	1.77	10	20 56.0	8 20 16.00	16 43 24.9	13.6	13.2	0.92
27	22 13.6	6 40 39.51	16 40 48.4	26.0	25.1	1.75	11	20 55.9	8 24 5.83	16 36 49.4	13.5	13.0	0.91
28	22 9.4	6 40 17.26	16 41 17.2	25.6	24.8	1.72	12	20 55.8	8 27 57.61	16 29 46.1	13.3	12.9	0.90
29	22 5.2	6 40 4.84	16 42 4.4	25.3	24.4	1.70	13	20 55.8	8 31 51.25	16 22 14.9	13.2	12.7	0.89
30	22 1.2	6 40 2.13	+16 43 8.8	24.9	24.0	1.67	14	20 55.8	8 35 46.64	+16 14 15.6	13.0	12.6	0.88
31	21 57.5	6 40 9.00	16 44 29.1	24.6	23.7	1.65	15	20 55.8	8 39 43.70	16 5 48.1	12.8	12.4	0.87
Aug. 1	21 53.8	6 40 25.32	16 46 3.8	24.2	23.3	1.62	16	20 55.9	8 43 42.34	15 56 52.5	12.7	12.3	0.86
2	21 50.3	6 40 50.93	16 47 51.5	23.8	23.0	1.60	17	20 55.9	8 47 42.46	15 47 28.6	12.6	12.2	0.85
3	21 46.9	6 41 25.63	16 49 50.6	23.5	22.6	1.58	18	20 56.0	8 51 43.96	15 37 36.4	12.5	12.1	0.84
4	21 43.7	6 42 9.22	+16 51 59.5	23.1	22.3	1.55	19	20 56.1	8 55 46.77	+15 27 16.0	12.3	11.9	0.83
5	21 40.7	6 43 1.50	16 54 16.8	22.8	22.0	1.53	20	20 56.2	8 59 50.80	15 16 27.3	12.2	11.8	0.82
6	21 37.7	6 44 2.26	16 56 40.8	22.4	21.6	1.50	21	20 56.3	9 3 55.96	15 5 10.4	12.1	11.7	0.81
7	21 34.9	6 45 11.25	16 59 10.0	22.0	21.3	1.48	22	20 56.4	9 8 2.20	14 53 25.4	12.0	11.6	0.80
8	21 32.2	6 46 28.26	17 1 42.9	21.7	20.9	1.46	23	20 56.6	9 12 9.45	14 41 12.5	11.9	11.4	0.79
9	21 29.7	6 47 53.05	+17 4 18.1	21.3	20.6	1.43	24	20 56.8	9 16 17.64	+14 28 31.8	11.8	11.3	0.78
10	21 27.3	6 49 25.41	17 6 54.0	21.0	20.3	1.41	25	20 57.0	9 20 26.71	14 15 23.6	11.7	11.2	0.77
11	21 25.0	6 51 5.08	17 9 28.8	20.7	20.0	1.39	26	20 57.2	9 24 36.61	14 1 48.0	11.5	11.1	0.76
12	21 22.8	6 52 51.81	17 12 1.0	20.3	19.7	1.37	27	20 57.4	9 28 47.27	13 47 45.1	11.4	11.0	0.75
13	21 20.7	6 54 45.37	17 14 29.5	20.0	19.3	1.35	28	20 57.7	9 32 58.66	13 33 15.2	11.3	10.9	0.74
14	21 18.9	6 56 45.54	+17 16 52.8	19.7	19.0	1.33	29	20 58.0	9 37 10.73	+13 18 18.5	11.2	10.8	0.73
15	21 17.0	6 58 52.06	+17 19 9.5	19.4	18.7	1.31	30	20 58.3	9 41 23.44	+13 2 55.4	11.1	10.7	0.73

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	20 58.6	9 45 36.73	+12 47 6.0	11.0	10.6	0.72	Nov. 16	21 17.0	13 5 25.48	− 4 55 7.3	7.8	7.5	0.51
2	20 58.9	9 49 50.57	12 30 50.7	10.9	10.5	0.72	17	21 17.5	13 9 54.79	5 21 38.1	7.8	7.5	0.50
3	20 59.2	9 54 4.92	12 14 9.7	10.8	10.4	0.71	18	21 18.1	13 14 24.76	5 48 6.3	7.7	7.5	0.50
4	20 59.5	9 58 19.76	11 57 3.4	10.7	10.3	0.70	19	21 18.6	13 18 55.42	6 14 31.2	7.7	7.4	0.50
5	20 59.8	10 2 35.05	11 39 32.3	10.6	10.2	0.69	20	21 19.2	13 23 26.77	6 40 52.0	7.6	7.4	0.50
6	21 0.1	10 6 50.76	+11 21 36.5	10.5	10.1	0.69	21	21 19.8	13 27 58.84	− 7 7 7.8	7.6	7.3	0.49
7	21 0.4	10 11 6.87	11 3 16.5	10 4	10.0	0.68	22	21 20.4	13 32 31.67	7 33 17.9	7.5	7.3	0.49
8	21 0.7	10 15 23.34	10 44 32.7	10.3	9.9	0.68	23	21 21.0	13 37 5.28	7 59 21.6	7.5	7.3	0.49
9	21 1.1	10 19 40.16	10 25 25.5	10.2	9.8	0.67	24	21 21.7	13 41 39.70	8 25 18.1	7.5	7.2	0.49
10	21 1.4	10 23 57.29	10 5 55.4	10.1	9.8	0.66	25	21 22.4	13 46 14.96	8 51 6.6	7.4	7.2	0.48
11	21 1.8	10 28 14.73	+ 9 46 2.8	10.0	9.7	0.66	26	21 23.1	13 50 51.09	− 9 16 46.4	7.4	7.1	0.48
12	21 2.2	10 32 32.43	9 25 48.3	9.9	9.6	0.65	27	21 23.8	13 55 28.11	9 42 16.6	7.3	7.1	0.48
13	21 2.6	10 36 50.39	9 5 12.3	9.8	9.5	0.64	28	21 24.5	14 0 6.04	10 7 36.4	7.3	7.1	0.48
14	21 2.9	10 41 8.59	8 44 15.5	9.7	9.5	0.64	29	21 25.2	14 4 44.91	10 32 45.2	7.3	7.0	0.48
15	21 3.3	10 45 27.01	8 22 58.3	9.7	9.4	0.63	30	21 25.9	14 9 24.75	10 57 42.1	7.2	7.0	0.47
16	21 3.7	10 49 45.64	+ 8 1 21.5	9.6	9.3	0.63	Dec. 1	21 26.6	14 14 5.58	−11 22 26.4	7.2	7.0	0.47
17	21 4.0	10 54 4.46	7 39 25.6	9.5	9.2	0.62	2	21 27.3	14 18 47.42	11 46 57.3	7.2	7.0	0.47
18	21 4.4	10 58 23.48	7 17 11.0	9.4	9.1	0.62	3	21 28.0	14 23 30.30	12 11 13.9	7.1	6.9	0.47
19	21 4.8	11 2 42.66	6 54 38.4	9.4	9.1	0.61	4	21 28.8	14 28 14.24	12 35 15.5	7.1	6.9	0.47
20	21 5.1	11 7 2.00	6 31 48.4	9.3	9.0	0.61	5	21 29.6	14 32 59.27	12 59 1.3	7.1	6.8	0.47
21	21 5.5	11 11 21.53	+ 6 8 41.8	9.2	8.9	0.60	6	21 30.4	14 37 45.41	−13 22 30.6	7.0	6.8	0.47
22	21 5.9	11 15 41.23	5 45 19.0	9.2	8.9	0.60	7	21 31.2	14 42 32.67	13 45 42.4	7.0	6.8	0.46
23	21 6.3	11 20 1.10	5 21 40.7	9.1	8.8	0.59	8	21 32.1	14 47 21.07	14 8 36.2	7.0	6.7	0.46
24	21 6.7	11 24 21.15	4 57 47.5	9.0	8.7	0.59	9	21 33.0	14 52 10.63	14 31 11.0	6.9	6.7	0.46
25	21 7.1	11 28 41.39	4 33 40.1	9.0	8.7	0.58	10	21 33.9	14 57 1.36	14 53 25.9	6.9	6.7	0.46
26	21 7.5	11 33 1.82	+ 4 9 19.0	8.9	8.6	0.58	11	21 34.8	15 1 53.27	−15 15 20.1	6.9	6.6	0.46
27	21 7.9	11 37 22.47	3 44 45.0	8.8	8.6	0.57	12	21 35.8	15 6 46.36	15 36 53.0	6.9	6.6	0.46
28	21 8.3	11 41 43.32	3 19 58.6	8.8	8.5	0.57	13	21 36.8	15 11 40.63	15 58 3.6	6.8	6.6	0.46
29	21 8.7	11 46 4.41	2 55 0.4	8.7	8.4	0.56	14	21 37.8	15 16 36.11	16 18 51.2	6.8	6.5	0.46
30	21 9.1	11 50 25.73	2 29 51.1	8.6	8.4	0.56	15	21 38.8	15 21 32.78	16 39 14.8	6.8	6.5	0.45
31	21 9.5	11 54 47.31	+ 2 4 31.4	8.6	8.3	0 56	16	21 39.8	15 26 30.66	−16 59 13.8	6.7	6.5	0.45
Nov. 1	21 9.9	11 59 9.17	1 39 1.9	8.5	8.3	0.55	17	21 40.8	15 31 29.75	17 18 47.3	6.7	6.5	0.45
2	21 10.4	12 3 31.34	1 13 23.3	8.5	8.2	0.55	18	21 41.9	15 36 30.02	17 37 54.5	6.7	6.4	0.45
3	21 10.8	12 7 53.83	0 47 36.4	8.4	8.2	0.55	19	21 43.0	15 41 31.47	17 56 34.6	6.6	6.4	0.45
4	21 11.2	12 12 16.67	+ 0 21 41.6	8.4	8.1	0.54	20	21 44.1	15 46 34.10	18 14 47.1	6.6	6.4	0.45
5	21 11.6	12 16 39.87	− 0 4 20.4	8.3	8.1	0.54	21	21 45.2	15 51 37.90	−18 32 31.0	6.6	6.4	0.45
6	21 12.1	12 21 3.46	0 30 28.8	8.3	8.0	0.54	22	21 46.3	15 56 42.85	18 49 45.8	6.6	6.3	0.45
7	21 12.5	12 25 27.45	0 56 42.9	8.2	8.0	0.53	23	21 47.5	16 1 48.95	19 6 30.6	6.5	6.3	0.44
8	21 13.0	12 29 51.89	1 23 2.0	8.2	7.9	0.53	24	21 48.7	16 6 56.19	19 22 44.7	6.5	6.3	0.44
9	21 13.4	12 34 16.78	1 49 25.4	8.1	7.9	0.53	25	21 49.9	16 12 4.54	19 38 27.3	6.5	6.3	0.44
10	21 13.9	12 38 42.12	− 2 15 52.3	8.1	7.8	0.52	26	21 51.1	16 17 14.00	−19 53 37.9	6.5	6.2	0.44
11	21 14.4	12 43 7.97	2 42 22.1	8.0	7.8	0.52	27	21 52.3	16 22 24.54	20 8 15.7	6.5	6.2	0.44
12	21 14.9	12 47 34.34	3 8 54.0	8.0	7.7	0.52	28	21 53.6	16 27 36.15	20 22 20.2	6.4	6.2	0.44
13	21 15.4	12 52 1.26	3 35 27.2	7.9	7.7	0.51	29	21 54.8	16 32 48.79	20 35 50.8	6.4	6.2	0.44
14	21 15.9	12 56 28.74	4 2 1.0	7.9	7.6	0.51	30	21 56.1	16 38 2.44	20 48 46.8	6.4	6.1	0.44
15	21 16.4	13 0 56.81	− 4 28 34.7	7.9	7.6	0.51	31	21 57.4	16 43 17.08	−21 1 7.7	6.4	6.1	0.44
16	21 17.0	13 5 25.48	− 4 55 7.3	7.8	7.5	0.51	32	21 58.7	16 48 32.67	−21 12 52.9	6.4	6.1	0.44

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s
Mar. 20	18 22.4	18 20 9.29	−23 35 45.4	7.2	4.1	0.30
21	18 21.0	18 22 43.28	23 35 47.1	7.2	4.1	0.30
22	18 19.6	18 25 16.96	23 35 40.7	7.3	4.1	0.30
23	18 18.2	18 27 50.30	23 35 26.3	7.3	4.2	0.30
24	18 16.8	18 30 23.28	23 35 4.0	7.4	4.2	0.30
25	18 15.5	18 32 55.89	−23 34 34.0	7.4	4.2	0.31
26	18 14.1	18 35 28.11	23 33 56.3	7.4	4.2	0.31
27	18 12.6	18 37 59.94	23 33 11.0	7.5	4.3	0.31
28	18 11.2	18 40 31.34	23 32 18.2	7.5	4.3	0.31
29	18 9.8	18 43 2.32	23 31 18.1	7.6	4.3	0.32
30	18 8.4	18 45 32.86	−23 30 10.7	7.7	4.4	0.32
31	18 6.9	18 48 2.95	23 28 56.2	7.7	4.4	0.32
Apr. 1	18 5.5	18 50 32.59	23 27 34.7	7.8	4.5	0.33
2	18 4.1	18 53 1.75	23 26 6.4	7.8	4.5	0.33
3	18 2.6	18 55 30.42	23 24 31.3	7.9	4.6	0.33
4	18 1.1	18 57 58.61	−23 22 49.7	8.0	4.6	0.34
5	17 59.6	19 0 26.29	23 21 1.6	8.0	4.6	0.34
6	17 58.2	19 2 53.47	23 19 7.2	8.1	4.7	0.34
7	17 56.7	19 5 20.13	23 17 6.5	8.2	4.7	0.35
8	17 55.2	19 7 46.26	23 14 59.8	8.3	4.8	0.35
9	17 53.6	19 10 11.85	−23 12 47.1	8.4	4.8	0.35
10	17 52.1	19 12 36.88	23 10 28.6	8.4	4.8	0.35
11	17 50.6	19 15 1.35	23 8 4.5	8.5	4.9	0.36
12	17 49.1	19 17 25.24	23 5 34.9	8.6	4.9	0.36
13	17 47.5	19 19 48.55	23 3 0.0	8.7	5.0	0.36
14	17 45.9	19 22 11.23	−23 0 20.0	8.8	5.0	0.37
15	17 44.4	19 24 33.27	22 57 34.8	8.8	5.0	0.37
16	17 42.8	19 26 54.68	22 54 44.9	8.9	5.1	0.37
17	17 41.2	19 29 15.41	22 51 50.3	9.0	5.1	0.38
18	17 39.6	19 31 35.45	22 48 51.3	9.1	5.2	0.38
19	17 38.0	19 33 54.78	−22 45 47.9	9.2	5.2	0.38
20	17 36.4	19 36 13.38	22 42 40.4	9.2	5.2	0.38
21	17 34.7	19 38 31.24	22 39 29.0	9.3	5.3	0.39
22	17 33.1	19 40 48.33	22 36 14.0	9.4	5.3	0.39
23	17 31.4	19 43 4.62	22 32 55.5	9.5	5.4	0.39
24	17 29.7	19 45 20.09	−22 29 33.7	9.6	5.4	0.40
25	17 28.0	19 47 34.73	22 26 8.9	9.6	5.5	0.40
26	17 26.3	19 49 48.51	22 22 41.4	9.7	5.5	0.40
27	17 24.6	19 52 1.43	22 19 11.2	9.8	5.6	0.40
28	17 22.9	19 54 13.47	22 15 38.7	9.9	5.6	0.41
29	17 21.1	19 56 24.60	−22 12 4.0	10.0	5.7	0.41
30	17 19.3	19 58 34.82	22 8 27.4	10.1	5.7	0.41
May 1	17 17.5	20 0 44.10	22 4 49.1	10.2	5.8	0.42
2	17 15.7	20 2 52.44	22 1 9.4	10.3	5.8	0.42
3	17 13.9	20 4 59.83	21 57 28.3	10.4	5.9	0.42
4	17 12.1	20 7 6.26	−21 53 46.3	10.5	6.0	0.43
5	17 10.3	20 9 11.69	−21 50 3.4	10.6	6.0	0.43
May 5	17 10.3	20 9 11.69	−21 50 3.4	10.6	6.0	0.43
6	17 8.4	20 11 16.12	21 46 20.0	10.7	6.1	0.44
7	17 6.5	20 13 19.52	21 42 36.3	10.8	6.1	0.44
8	17 4.6	20 15 21.89	21 38 52.5	10.9	6.2	0.45
9	17 2.7	20 17 23.20	21 35 8.8	11.1	6.3	0.45
10	17 0.8	20 19 23.42	−21 31 25.6	11.2	6.3	0.45
11	16 58.8	20 21 22.55	21 27 42.9	11.3	6.4	0.46
12	16 56.8	20 23 20.55	21 24 1.2	11.4	6.5	0.46
13	16 54.8	20 25 17.40	21 20 20.8	11.5	6.5	0.47
14	16 52.8	20 27 13.05	21 16 41.8	11.6	6.6	0.47
15	16 50.8	20 29 7.47	−21 13 4.6	11.7	6.7	0.48
16	16 48.8	20 31 0.64	21 9 29.6	11.8	6.7	0.48
17	16 46.7	20 32 52.54	21 5 56.9	11.9	6.8	0.49
18	16 44.6	20 34 43.12	21 2 26.9	12.0	6.9	0.49
19	16 42.5	20 36 32.35	20 58 59.9	12.2	7.0	0.50
20	16 40.3	20 38 20.19	−20 55 36.3	12.3	7.0	0.50
21	16 38.2	20 40 6.61	20 52 16.5	12.4	7.1	0.51
22	16 36.0	20 41 51.57	20 49 0.7	12.5	7.2	0.52
23	16 33.8	20 43 35.04	20 45 49.2	12.6	7.2	0.52
24	16 31.6	20 45 16.99	20 42 42.4	12.8	7.3	0.53
25	16 29.3	20 46 57.38	−20 39 40.7	12.9	7.3	0.53
26	16 27.0	20 48 36.19	20 36 44.3	13.1	7.4	0.54
27	16 24.7	20 50 13.39	20 33 53.5	13.2	7.5	0.54
28	16 22.3	20 51 48.94	20 31 8.7	13.3	7.6	0.55
29	16 19.9	20 53 22.81	20 28 30.0	13.5	7.7	0.55
30	16 17.5	20 54 54.99	−20 25 57.9	13.6	7.7	0.56
31	16 15.1	20 56 25.43	20 23 32.7	13.8	7.8	0.56
June 1	16 12.6	20 57 54.11	20 21 14.6	13.9	7.9	0.57
2	16 10.2	20 59 20.99	20 19 3.9	14.1	8.0	0.57
3	16 7.7	21 0 46.04	20 17 0.9	14.2	8.1	0.58
4	16 5.1	21 2 9.23	−20 15 6.0	14.4	8.2	0.59
5	16 2.5	21 3 30.53	20 13 19.4	14.5	8.3	0.59
6	15 59.9	21 4 49.91	20 11 41.5	14.7	8.4	0.60
7	15 57.3	21 6 7.33	20 10 12.4	14.8	8.5	0.61
8	15 54.6	21 7 22.71	20 8 52.7	15.0	8.6	0.61
9	15 51.9	21 8 36.02	−20 7 42.5	15.2	8.6	0.62
10	15 49.2	21 9 47.24	20 6 42.2	15.3	8.7	0.62
11	15 46.4	21 10 56.31	20 5 52.0	15.5	8.8	0.63
12	15 43.5	21 12 3.17	20 5 12.2	15.6	8.9	0.64
13	15 40.7	21 13 7.78	20 4 43.2	15.8	9.0	0.64
14	15 37.8	21 14 10.07	−20 4 25.4	15.9	9.1	0.65
15	15 34.9	21 15 9.99	20 4 19.1	16.1	9.2	0.66
16	15 31.9	21 16 7.50	20 4 24.5	16.3	9.3	0.66
17	15 28.9	21 17 2.54	20 4 42.0	16.5	9.4	0.67
18	15 25.8	21 17 55.03	20 5 11.8	16.7	9.5	0.68
19	15 22.7	21 18 44.94	−20 5 54.3	16.8	9.6	0.69
20	15 19.5	21 19 32.23	−20 6 49.5	17.0	9.7	0.69

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass Mer.
	h m	h m s	° ′ ″	″	″	s
June 20	15 19.5	21 19 32.23	−20 6 49.5	17.0	9.7	0.69
21	15 16.3	21 20 16.84	20 7 57.8	17.2	9.8	0.70
22	15 13.1	21 20 58.73	20 9 19.1	17.4	9.9	0.71
23	15 9.8	21 21 37.85	20 10 54.0	17.6	10.0	0.71
24	15 6.5	21 22 14.15	20 12 42.4	17.7	10.1	0.72
25	15 3.1	21 22 47.60	−20 14 44.3	17.9	10.2	0.73
26	14 59.7	21 23 18.20	20 16 59.6	18.1	10.3	0.73
27	14 56.2	21 23 45.91	20 19 28.4	18.3	10.4	0.74
28	14 52.7	21 24 10.68	20 22 10.9	18.5	10.6	0.75
29	14 49.1	21 24 32.50	20 25 6.9	18.7	10.7	0.76
30	14 45.5	21 24 51.35	−20 28 16.3	18.9	10.8	0.77
July 1	14 41.8	21 25 7.21	20 31 38.9	19.1	10.9	0.77
2	14 38.1	21 25 20.05	20 35 14.6	19.3	11.0	0.78
3	14 34.3	21 25 29.84	20 39 3.2	19.5	11.1	0.79
4	14 30.5	21 25 36.60	20 43 4.5	19.6	11.2	0.80
5	14 26.6	21 25 40.30	−20 47 18.3	19.8	11.3	0.81
6	14 22.7	21 25 40.92	20 51 44.3	20.0	11.4	0.81
7	14 18.7	21 25 38.45	20 56 22.2	20.2	11.5	0.82
8	14 14.7	21 25 32.87	21 1 11.6	20.4	11.6	0.83
9	14 10.7	21 25 24.19	21 6 12.1	20.6	11.7	0.83
10	14 6.6	21 25 12.42	−21 11 23.3	20.7	11.8	0.84
11	14 2.4	21 24 57.57	21 16 44.8	20.9	11.9	0.84
12	13 58.2	21 24 39.62	21 22 16.0	21.0	12.0	0.85
13	13 53.9	21 24 18.58	21 27 56.5	21.2	12.1	0.86
14	13 49.6	21 23 54.49	21 33 45.6	21.3	12.2	0.86
15	13 45.2	21 23 27.38	−21 39 42.6	21.5	12.3	0.87
16	13 40.7	21 22 57.30	21 45 46.9	21.6	12.4	0.88
17	13 36.2	21 22 24.30	21 51 57.6	21.8	12.5	0.89
18	13 31.7	21 21 48.42	21 58 14.1	22.0	12.5	0.90
19	13 27.1	21 21 9.74	22 4 35.3	22.1	12.6	0.91
20	13 22.5	21 20 28.34	−22 11 0.3	22.3	12.7	0.91
21	13 17.9	21 19 44.32	22 17 28.2	22.4	12.8	0.92
22	13 13.2	21 18 57.80	22 23 57.8	22.5	12.9	0.92
23	13 8.4	21 18 8.88	22 30 28.1	22.6	12.9	0.93
24	13 3.6	21 17 17.71	22 36 58.0	22.7	13.0	0.93
25	12 58.8	21 16 24.41	−22 43 26.4	22.8	13.0	0.94
26	12 54.0	21 15 29.18	22 49 52.0	22.9	13.1	0.94
27	12 49.1	21 14 32.15	22 56 13.8	23.0	13.1	0.95
28	12 44.2	21 13 33.45	23 2 30.7	23.1	13.2	0.96
29	12 39.3	21 12 33.28	23 8 41.6	23.1	13.2	0.96
30	12 34.3	21 11 31.82	−23 14 45.3	23.2	13.2	0.96
31	12 29.3	21 10 29.23	23 20 40.7	23.2	13.3	0.96
Aug. 1	12 24.3	21 9 25.71	23 26 26.9	23.3	13.3	0.97
2	12 19.3	21 8 21.41	23 32 2.8	23.3	13.3	0.97
3	12 14.3	21 7 16.52	23 37 27.5	23.3	13.3	0.97
4	12 9.3	21 6 11.23	−23 42 40.3	23.3	13.3	0.97
5	12 4.3	21 5 5.73	−23 47 40.1	23.3	13.3	0.98
Aug. 5	12 4.3	21 5 5.73	−23 47 40.1	23.3	13.3	0.98
6	11 59.3	21 4 0.20	23 52 26.3	23.4	13.4	0.98
7	11 54.2	21 2 54.80	23 56 58.1	23.4	13.4	0.98
8	11 49.2	21 1 49.72	24 1 14.8	23.4	13.4	0.98
9	11 44.2	21 0 45.14	24 5 15.8	23.4	13.4	0.98
10	11 39.2	20 59 41.26	−24 9 0.5	23.3	13.4	0.97
11	11 34.3	20 58 38.23	24 12 28.4	23.3	13.3	0.97
12	11 29.3	20 57 36.25	24 15 38.9	23.2	13.3	0 97
13	11 24.3	20 56 35.47	24 18 31.9	23.2	13.3	0.97
14	11 19.4	20 55 36.08	24 21 6.8	23.2	13.2	0.96
15	11 14.5	20 54 38.24	−24 23 23.2	23.1	13.2	0.96
16	11 9.6	20 53 42.15	24 25 21.0	23.1	13.1	0.96
17	11 4.8	20 52 47.96	24 26 59.9	23.0	13.1	0.96
18	11 0.0	20 51 55.83	24 28 19.8	22.9	13.0	0.95
19	10 55.3	20 51 5.91	24 29 20.5	22.8	13.0	0.95
20	10 50.6	20 50 18.34	−24 30 1.9	22.7	12.9	0.94
21	10 45.9	20 49 33.27	24 30 23.9	22.6	12.9	0.94
22	10 41.2	20 48 50.84	24 30 26.6	22.4	12.8	0.93
23	10 36.6	20 48 11.19	24 30 10.0	22.3	12.8	0.93
24	10 32.1	20 47 34.39	24 29 34.3	22.2	12.7	0.92
25	10 27.6	20 47 0.56	−24 28 39.5	22.1	12.6	0.92
26	10 23.2	20 46 29.79	24 27 25.9	22.0	12.5	0.91
27	10 18.8	20 46 2.16	24 25 53.7	21.8	12.4	0.91
28	10 14.4	20 45 37.72	24 24 3.0	21.7	12.3	0.90
29	10 10.1	20 45 16.54	24 21 54.4	21.5	12.2	0.89
30	10 5.9	20 44 58.63	−24 19 28.0	21.3	12.1	0.88
31	10 1.7	20 44 44.02	24 16 44.3	21.2	12.0	0.87
Sept. 1	9 57.6	20 44 32.74	24 13 43.5	21.0	11.9	0.87
2	9 53.6	20 44 24.81	24 10 26.0	20.8	11.8	0.86
3	9 49.6	20 44 20.23	24 6 52.1	20.6	11.7	0.85
4	9 45.6	20 44 18.99	−24 3 2.4	20.5	11.6	0.85
5	9 41.7	20 44 21.07	23 58 57.1	20.3	11.5	0.84
6	9 37.9	20 44 26.46	23 54 36.6	20.2	11.5	0.84
7	9 34.1	20 44 35.14	23 50 1.1	20.0	11.4	0.83
8	9 30.3	20 44 47.09	23 45 11.1	19.8	11.3	0.82
9	9 26.6	20 45 2.28	−23 40 7.0	19.6	11.2	0.81
10	9 23.0	20 45 20.66	23 34 49.0	19.4	11.1	0.81
11	9 19.5	20 45 42.23	23 29 17.5	19.3	11.0	0.80
12	9 16.0	20 46 6.97	23 23 32.5	19.1	10.9	0.79
13	9 12.5	20 46 34.84	23 17 34.5	18.9	10.8	0.78
14	9 9.1	20 47 5.81	−23 11 23.7	18.7	10.7	0.77
15	9 5.7	20 47 39.84	23 5 0.2	18.5	10.6	0.77
16	9 2.4	20 48 16.88	22 58 24.4	18.4	10.5	0.76
17	8 59.1	20 48 56.90	22 51 36.5	18.2	10.4	0.75
18	8 55.8	20 49 39.87	22 44 36.6	18.1	10.3	0.74
19	8 52.6	20 50 25.74	−22 37 25.0	17.9	10.2	0.73
20	8 49.5	20 51 14.47	−22 30 1.7	17.8	10.1	0.72

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi diam.	S.T. of Sem. Pass Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Sept. 20	8 49.5	20 51 14.47	−22 30 1.7	17.8	10.1	0.72	Nov. 5	7 1.3	22 4 2.62	−14 1 25.8	11.3	6.5	0.44
21	8 46.5	20 52 6.00	22 22 26.9	17.6	10.0	0.71	6	6 59.5	22 6 6.28	13 47 21.5	11.2	6.4	0.43
22	8 43.5	20 53 0.29	22 14 40.8	17.4	9.9	0.70	7	6 57.6	22 8 10.59	13 33 11.0	11.1	6.3	0.43
23	8 40.5	20 53 57.29	22 6 43.7	17.2	9.8	0.69	8	6 55.7	22 10 15.53	13 18 54.5	11.0	6.3	0.42
24	8 37.6	20 54 56.93	21 58 35.7	17.0	9.7	0.69	9	6 53.9	22 12 21.08	13 4 32.2	10.9	6.2	0.42
25	8 34.7	20 55 59.17	−21 50 16.8	16.8	9.6	0.68	10	6 52.1	22 14 27.21	−12 50 4.1	10.8	6.2	0.42
26	8 31.8	20 57 3.93	21 41 47.4	16.7	9.5	0.68	11	6 50.2	22 16 33.91	12 35 30.4	10.7	6.1	0.41
27	8 29.0	20 58 11.14	21 33 7.6	16.5	9.4	0.67	12	6 48.4	22 18 41.17	12 20 51.0	10.6	6.0	0.41
28	8 26.2	20 59 20.76	21 24 17.6	16.3	9.3	0.66	13	6 46.6	22 20 48.97	12 6 6.0	10.5	6.0	0.41
29	8 23.5	21 0 32.70	21 15 17.4	16.2	9.2	0.65	14	6 44.8	22 22 57.31	11 51 15.6	10.4	5.9	0.40
30	8 20.8	21 1 46.91	−21 6 7.3	16.0	9.1	0.64	15	6 43.0	22 25 6.15	−11 36 19.9	10.3	5.9	0.40
Oct. 1	8 18.2	21 3 3.30	20 56 47.4	15.9	9.0	0.64	16	6 41.2	22 27 15.50	11 21 18.8	10.3	5.9	0.40
2	8 15.5	21 4 21.82	20 47 18.0	15.7	8.9	0.63	17	6 39.5	22 29 25.34	11 6 12.6	10.2	5.8	0.39
3	8 12.9	21 5 42.42	20 37 39.1	15.6	8.8	0.62	18	6 37.7	22 31 35.66	10 51 1.1	10.1	5.8	0.39
4	8 10.4	21 7 5.01	20 27 50.9	15.4	8.7	0.62	19	6 35.9	22 33 46.43	10 35 44.7	10.0	5.7	0.39
5	8 7.8	21 8 29.54	−20 17 53.5	15.3	8.6	0.61	20	6 34.2	22 35 57.65	−10 20 23.4	9.9	5.6	0.38
6	8 5.3	21 9 55.95	20 7 47.1	15.1	8.6	0.61	21	6 32.4	22 38 9.29	10 4 57.3	9.9	5.6	0.38
7	8 2.9	21 11 24.18	19 57 31.9	15.0	8.5	0.60	22	6 30.7	22 40 21.36	9 49 26.4	9.8	5.5	0.38
8	8 0.4	21 12 54.19	19 47 7.8	14.8	8.4	0.60	23	6 29.0	22 42 33.82	9 33 51.0	9.7	5.5	0.38
9	7 58.0	21 14 25.93	19 36 34.9	14.7	8.3	0.59	24	6 27.2	22 44 46.67	9 18 11.3	9.6	5.4	0.37
10	7 55.6	21 15 59.34	−19 25 53.5	14.5	8.2	0.59	25	6 25.5	22 46 59.89	− 9 2 27.3	9.5	5.4	0.37
11	7 53.3	21 17 34.36	19 15 3.6	14.4	8.2	0.58	26	6 23.8	22 49 13.46	8 46 39.1	9.5	5.4	0.37
12	7 51.0	21 19 10.96	19 4 5.2	14.3	8.1	0.58	27	6 22.1	22 51 27.36	8 30 47.0	9.4	5.3	0.36
13	7 48.7	21 20 49.10	18 52 58.4	14.1	8.0	0.57	28	6 20.4	22 53 41.58	8 14 51.1	9.3	5.3	0.36
14	7 46.4	21 22 28.74	18 41 43.3	14.0	7.9	0.56	29	6 18.7	22 55 56.10	7 58 51.6	9.2	5.2	0.36
15	7 44.1	21 24 9.84	−18 30 20.0	13.8	7.8	0.56	30	6 17.0	22 58 10.93	− 7 42 48.6	9.1	5.2	0.35
16	7 41.9	21 25 52.37	18 18 48.4	13.7	7.8	0.55	Dec. 1	6 15.3	23 0 26.04	7 26 42.2	9.1	5.2	0.35
17	7 39.7	21 27 36.29	18 7 8.7	13.5	7.7	0.54	2	6 13.7	23 2 41.42	7 10 32.6	9.0	5.1	0.35
18	7 37.5	21 29 21.54	17 55 20.7	13.4	7.6	0.54	3	6 12.0	23 4 57.06	6 54 19.9	9.0	5.1	0.35
19	7 35.3	21 31 8.10	17 43 24.5	13.3	7.5	0.53	4	6 10.3	23 7 12.96	6 38 4.3	8.9	5.0	0.34
20	7 33.2	21 32 55.93	−17 31 20.5	13.1	7.4	0.52	5	6 8.6	23 9 29.11	− 6 21 45.8	8.8	5.0	0.34
21	7 31.1	21 34 45.00	17 19 8.6	13.0	7.4	0.52	6	6 7.0	23 11 45.52	6 5 24.6	8.7	5.0	0.34
22	7 29.0	21 36 35.26	17 6 48.8	12.9	7.3	0.51	7	6 5.3	23 14 2.16	5 49 0.8	8.6	4.9	0.34
23	7 26.9	21 38 26.68	16 54 21.2	12.8	7.3	0.51	8	6 3.7	23 16 19.04	5 32 34.6	8.5	4.9	0.33
24	7 24.9	21 40 19.22	16 41 46.0	12.7	7.2	0.50	9	6 2.0	23 18 36.15	5 16 6.0	8.5	4.8	0.33
25	7 22.8	21 42 12.82	−16 29 3.2	12.5	7.2	0.50	10	6 0.4	23 20 53.49	− 4 59 35.1	8.4	4.8	0.33
26	7 20.8	21 44 7.45	16 16 13.0	12.4	7.1	0.49	11	5 58.7	23 23 11.07	4 43 2.1	8.4	4.8	0.32
27	7 18.8	21 46 3.08	16 3 15.3	12.3	7.1	0.48	12	5 57.1	23 25 28.88	4 26 27.0	8.3	4.7	0.32
28	7 16.8	21 47 59.68	15 50 10.4	12.2	7.0	0.48	13	5 55.4	23 27 46.92	4 9 49.8	8.2	4.7	0.32
29	7 14.8	21 49 57.21	15 36 58.4	12.1	7.0	0.47	14	5 53.8	23 30 5.19	3 53 10.9	8.2	4.6	0.31
30	7 12.8	21 51 55.61	−15 23 39.4	11.9	6.9	0.47	15	5 52.2	23 32 23.69	− 3 36 30.2	8.1	4.6	0.31
31	7 10.9	21 53 54.84	15 10 13.6	11.8	6.8	0.46	16	5 50.5	23 34 42.41	3 19 47.7	8.1	4.6	0.31
Nov. 1	7 9.0	21 55 54.89	14 56 41.0	11.7	6.8	0.46	17	5 48.9	23 37 1.36	3 3 3.7	8.0	4.5	0.31
2	7 7.0	21 57 55.72	14 43 1.9	11.6	6.7	0.45	18	5 47.3	23 39 20.54	2 46 18.3	8.0	4.5	0.30
3	7 5.1	21 59 57.30	14 29 16.2	11.5	6.7	0.45	19	5 45.7	23 41 39.94	2 29 31.6	7.9	4.5	0.30
4	7 3.2	22 1 59.62	−14 15 23.9	11.4	6.6	0.44	20	5 44.1	23 43 59.56	− 2 12 43.7	7.8	4.4	0.30
5	7 1.3	22 4 2.62	−14 1 25.8	11.3	6.5	0.44	21	5 42.5	23 46 19.38	− 1 55 54.8	7.8	4.4	0.30

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Polar Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Polar Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
July 1	18 39.9	1 23 46.10	+7 25 53.9	1.7	18.7	1.32	Aug. 16	15 49.7	1 34 32.26	+8 16 50.3	2.0	21.5	1.52
2	18 36.4	1 24 14.28	7 28 27.0	1.7	18.7	1.33	17	15 45.8	1 34 29.76	8 16 19.4	2.0	21.6	1.53
3	18 32.9	1 24 41.92	7 30 56.7	1.7	18.8	1.33	18	15 41.8	1 34 26.50	8 15 44.3	2.0	21.6	1.53
4	18 29.5	1 25 9.02	7 33 22.8	1.7	18.8	1.33	19	15 37.8	1 34 22.48	8 15 4.8	2.0	21.7	1.54
5	18 26.0	1 25 35.56	7 35 45.4	1.8	18.9	1.34	20	15 33.8	1 34 17.72	8 14 21.0	2.0	21.8	1.54
6	18 22.4	1 26 1.56	+7 38 4.4	1.8	18.9	1.34	21	15 29.7	1 34 12.21	+8 13 33.0	2.0	21.8	1.55
7	18 18.9	1 26 26.99	7 40 19.9	1 8	19.0	1.34	22	15 25.7	1 34 5.95	8 12 40.7	2.1	21.9	1.55
8	18 15.4	1 26 51.85	7 42 31.8	1.8	19.0	1.35	23	15 21.7	1 33 58.94	8 11 44.2	2.1	22.0	1.56
9	18 11.9	1 27 16.14	7 44 40.1	1.8	19.1	1.35	24	15 17.6	1 33 51.19	8 10 43.6	2.1	22.1	1.56
10	18 8.3	1 27 39.84	7 46 44.7	1.8	19.1	1.36	25	15 13.5	1 33 42.71	8 9 38.8	2.1	22.1	1.57
11	18 4.8	1 28 2.96	+7 48 45.6	1.8	19.2	1.36	26	15 9.4	1 33 33.49	+8 8 29.9	2.1	22.2	1.57
12	18 1.2	1 28 25.49	7 50 42.8	1.8	19.2	1.37	27	15 5.3	1 33 23.54	8 7 16.8	2.1	22.2	1.58
13	17 57.7	1 28 47.41	7 52 36.2	1.8	19.3	1.37	28	15 1.2	1 33 12.88	8 5 59.7	2.1	22.3	1.58
14	17 54.1	1 29 8.73	7 54 25.9	1.8	19.4	1.37	29	14 57.1	1 33 1.50	8 4 38.7	2.1	22.4	1.58
15	17 50.5	1 29 29.43	7 56 11.8	1.8	19.4	1.38	30	14 53.0	1 32 49.41	8 3 13.6	2.1	22.4	1.59
16	17 46.9	1 29 49.50	+7 57 53.8	1.8	19.5	1.38	31	14 48.8	1 32 36.61	+8 1 44.7	2.1	22.5	1.59
17	17 43.3	1 30 8.94	7 59 32.0	1.8	19.6	1.39	Sept. 1	14 44.7	1 32 23 12	8 0 11.8	2.1	22.6	1.59
18	17 39.7	1 30 27.75	8 1 6.2	1.8	19.6	1.39	2	14 40.5	1 32 8.95	7 58 35.2	2.1	22.6	1.60
19	17 36.0	1 30 45.91	8 2 36.5	1.8	19.7	1.39	3	14 36.3	1 31 54.09	7 56 54.8	2.1	22.7	1.60
20	17 32.4	1 31 3.42	8 4 2.8	1.8	19.7	1.40	4	14 32.1	1 31 38.57	7 55 10.6	2.1	22.7	1.61
21	17 28.8	1 31 20.27	+8 5 25.2	1.9	19.8	1.40	5	14 27.9	1 31 22.38	+7 53 22.7	2.1	22.8	1.61
22	17 25.1	1 31 36.46	8 6 43.5	1.9	19.9	1.41	6	14 23.7	1 31 5.54	7 51 31.2	2.1	22.8	1.62
23	17 21.4	1 31 51.98	8 7 57.7	1.9	19.9	1.41	7	14 19.5	1 30 48.05	7 49 36.2	2.1	22.9	1.62
24	17 17.7	1 32 6.82	8 9 7.9	1.9	20.0	1.42	8	14 15.3	1 30 29.93	7 47 37.6	2.1	22.9	1.62
25	17 14.0	1 32 20.98	8 10 14.1	1.9	20.1	1.42	9	14 11.0	1 30 11.17	7 45 35.6	2.2	23.0	1.63
26	17 10.3	1 32 34.45	+8 11 16.0	1.9	20.1	1.43	10	14 6.8	1 29 51.81	+7 43 30.2	2.2	23.0	1.63
27	17 6.6	1 32 47.23	8 12 13.9	1.9	20.2	1.43	11	14 2.5	1 29 31.83	7 41 21.5	2.2	23.1	1.63
28	17 2.9	1 32 59.32	8 13 7.7	1.9	20.3	1.44	12	13 58.2	1 29 11.25	7 39 9.4	2.2	23.1	1.64
29	16 59.2	1 33 10.71	8 13 57.3	1.9	20.3	1.44	13	13 53.9	1 28 50.09	7 36 54.1	2.2	23.1	1.64
30	16 55.4	1 33 21.39	8 14 42.7	1.9	20.4	1.45	14	13 49.7	1 28 28.37	7 34 35.8	2.2	23.2	1.64
31	16 51.6	1 33 31.37	+8 15 24.0	1.9	20.5	1.45	15	13 45.4	1 28 6.09	+7 32 14.4	2.2	23.2	1.64
Aug. 1	16 47.8	1 33 40.64	8 16 1.1	1.9	20.5	1.46	16	13 41.1	1 27 43.27	7 29 50.0	2.2	23.2	1.65
2	16 44.0	1 33 49.19	8 16 34.0	1.9	20.6	1.46	17	13 36.7	1 27 19.92	7 27 22.7	2.2	23.3	1.65
3	16 40.2	1 33 57.03	8 17 2.7	1.9	20.6	1.47	18	13 32.4	1 26 56.06	7 24 52.7	2.2	23.3	1.65
4	16 36.4	1 34 4.14	8 17 27.2	1.9	20.7	1.47	19	13 28.1	1 26 31.71	7 22 20.0	2.2	23.3	1.65
5	16 32.6	1 34 10.53	+8 17 47.5	1.9	20.7	1.47	20	13 23.7	1 26 6.88	+7 19 44.8	2.2	23.4	1.66
6	16 28.8	1 34 16.20	8 18 3.5	2.0	20.8	1.48	21	13 19.4	1 25 41.59	7 17 7.1	2.2	23.4	1.66
7	16 24.9	1 34 21.14	8 18 15.4	2.0	20.9	1.48	22	13 15.0	1 25 15.86	7 14 27.1	2.2	23.4	1.66
8	16 21.0	1 34 25.35	8 18 23.1	2.0	20.9	1.48	23	13 10.7	1 24 49.71	7 11 44.8	2.2	23.4	1.66
9	16 17.2	1 34 28.82	8 18 26.5	2.0	21.0	1.49	24	13 6.3	1 24 23.16	7 9 0.4	2.2	23.5	1.67
10	16 13.3	1 34 31.54	+8 18 25.6	2.0	21.1	1.49	25	13 1.9	1 23 56.22	+7 6 14.0	2.2	23.5	1.67
11	16 9.4	1 34 33.53	8 18 20.4	2.0	21.2	1.50	26	12 57.5	1 23 28.93	7 3 25.8	2.2	23.5	1.67
12	16 5.5	1 34 34.77	8 18 10.9	2.0	21.2	1.50	27	12 53.1	1 23 1.30	7 0 35.9	2.2	23.6	1.67
13	16 1.6	1 34 35.27	8 17 57.1	2.0	21.3	1.51	28	12 48.7	1 22 33.35	6 57 44.4	2.2	23.6	1.68
14	15 57.6	1 34 35.02	8 17 39.1	2.0	21.3	1.51	29	12 44.3	1 22 5.11	6 54 51.4	2.2	23.6	1.68
15	15 53.7	1 34 34.02	+8 17 16.8	2.0	21.4	1.52	30	12 39.9	1 21 36.59	+6 51 57.0	2.2	23.6	1.68
16	15 49.7	1 34 32 26	+8 16 50.3	2.0	21.5	1.52	Oct. 1	12 35.5	1 21 7.81	+6 49 1.4	2.2	23.6	1.68

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Polar Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Polar Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	12 35.5	1 21 7.81	+6 49 1.4	2.2	23.6	1.68	Nov. 16	9 14.3	1 0 44.96	+4 50 27.4	2.1	22.8	1.61
2	12 31.1	1 20 38.80	6 46 4.8	2.2	23.7	1.69	17	9 10.1	1 0 28.16	4 48 59.8	2.1	22.7	1.61
3	12 26.7	1 20 9.57	6 43 7.1	2.2	23.7	1.69	18	9 5.9	1 0 12.04	4 47 36.6	2.1	22.6	1.60
4	12 22.3	1 19 40.15	6 40 8.6	2.2	23.7	1.69	19	9 1.7	0 59 56.59	4 46 17.8	2.1	22.6	1.60
5	12 17.8	1 19 10.56	6 37 9.4	2.2	23.7	1.69	20	8 57.6	0 59 41.84	4 45 3.6	2.1	22.5	1.59
6	12 13.4	1 18 40.81	+6 34 9.6	2.2	23.8	1.69	21	8 53.4	0 59 27.79	+4 43 53.9	2.1	22.4	1.59
7	12 9.0	1 18 10.94	6 31 9.3	2.2	23.8	1.69	22	8 49.2	0 59 14.45	4 42 48.8	2.1	22.4	1.58
8	12 4.5	1 17 40.96	6 28 8.6	2.2	23.8	1.69	23	8 45.1	0 59 1.84	4 41 48.4	2.1	22.3	1.58
9	12 0.1	1 17 10.90	6 25 7.8	2.2	23.8	1.69	24	8 41.0	0 58 49.95	4 40 52.7	2.1	22.2	1.57
10	11 55.7	1 16 40.77	6 22 6.8	2.2	23.8	1.69	25	8 36.9	0 58 38.79	4 40 1.7	2.1	22.1	1.57
11	11 51.2	1 16 10.60	+6 19 6.0	2.2	23.8	1.69	26	8 32.7	0 58 28.36	+4 39 15.5	2.1	22.1	1.56
12	11 46.8	1 15 40.41	6 16 5.3	2.2	23.8	1.69	27	8 28.6	0 58 18.68	4 38 34.1	2.1	22.0	1.56
13	11 42.4	1 15 10.23	6 13 5.0	2.2	23.8	1.69	28	8 24.6	0 58 9.74	4 37 57.4	2.1	21.9	1.56
14	11 37.9	1 14 40.07	6 10 5.2	2.2	23.8	1.69	29	8 20.5	0 58 1.55	4 37 25.6	2.1	21.9	1.55
15	11 33.5	1 14 9.97	6 7 6.0	2.2	23.8	1.69	30	8 16.4	0 57 54.12	4 36 58.6	2.1	21.8	1.55
16	11 29.1	1 13 39.94	+6 4 7.6	2.2	23.8	1.69	Dec. 1	8 12.4	0 57 47.45	+4 36 36.4	2.0	21.8	1.55
17	11 24.6	1 13 10.02	6 1 10.1	2.2	23.8	1.69	2	8 8.4	0 57 41.53	4 36 19.0	2.0	21.7	1.54
18	11 20.2	1 12 40.21	5 58 13.7	2.2	23.7	1.68	3	8 4.3	0 57 36.37	4 36 6.5	2.0	21.7	1.54
19	11 15.8	1 12 10.55	5 55 18.5	2.2	23.7	1.68	4	8 0.3	0 57 31.97	4 35 58.8	2.0	21.6	1.53
20	11 11.4	1 11 41.06	5 52 24.6	2.2	23.7	1.68	5	7 56.3	0 57 28.33	4 35 56.0	2.0	21.5	1.53
21	11 6.9	1 11 11.76	+5 49 32.3	2.2	23.7	1.68	6	7 52.4	0 57 25.46	+4 35 58.0	2.0	21.4	1.52
22	11 2.5	1 10 42.69	5 46 41.6	2.2	23.7	1.68	7	7 48.4	0 57 23.36	4 36 4.8	2.0	21.4	1.52
23	10 58.1	1 10 13.87	5 43 52.8	2.2	23.6	1.68	8	7 44.4	0 57 22.02	4 36 16.4	2.0	21.3	1.51
24	10 53.7	1 9 45.29	5 41 5.8	2.2	23.6	1.68	9	7 40.5	0 57 21.45	4 36 32.9	2.0	21.2	1.51
25	10 49.3	1 9 17.01	5 38 20.9	2.2	23.6	1.68	10	7 36.6	0 57 21.64	4 36 54.2	2.0	21.1	1.50
26	10 44.9	1 8 49.03	+5 35 38.3	2.2	23.6	1.68	11	7 32.7	0 57 22.60	+4 37 20.3	2.0	21.1	1.50
27	10 40.5	1 8 21.39	5 32 58.0	2.2	23.5	1.67	12	7 28.8	0 57 24.33	4 37 51.3	2.0	21.0	1.49
28	10 36.1	1 7 54.09	5 30 20.1	2.2	23.5	1.67	13	7 24.9	0 57 26.82	4 38 27.1	2.0	20.9	1.49
29	10 31.8	1 7 27.15	5 27 44.8	2.2	23.5	1.67	14	7 21.0	0 57 30.09	4 39 7.7	2.0	20.8	1.48
30	10 27.3	1 7 0.62	5 25 12.3	2.2	23.5	1.67	15	7 17.1	0 57 34.12	4 39 53.1	2.0	20.8	1.48
31	10 23.0	1 6 34.49	+5 22 42.5	2.2	23.4	1.67	16	7 13.3	0 57 38.92	+4 40 43.2	2.0	20.7	1.47
Nov. 1	10 18.7	1 6 8.78	5 20 15.6	2.2	23.4	1.67	17	7 9.4	0 57 44.49	4 41 38.1	2.0	20.7	1.47
2	10 14.3	1 5 43.51	5 17 51.7	2.2	23.4	1.66	18	7 5.6	0 57 50.82	4 42 37.8	1.9	20.6	1.46
3	10 10.0	1 5 18.70	5 15 31.0	2.2	23.3	1.66	19	7 1.8	0 57 57.90	4 43 42.1	1.9	20.6	1.46
4	10 5.6	1 4 54.36	5 13 13.5	2.2	23.3	1.66	20	6 58.0	0 58 5.74	4 44 51.1	1.9	20.5	1.45
5	10 1.3	1 4 30.52	+5 10 59.3	2.2	23.3	1.66	21	6 54.2	0 58 14.33	+4 46 4.8	1.9	20.4	1.45
6	9 57.0	1 4 7.18	5 8 48.5	2.2	23.2	1.65	22	6 50.4	0 58 23.67	4 47 23.1	1.9	20.3	1.44
7	9 52.7	1 3 44.36	5 6 41.3	2.2	23.2	1.65	23	6 46.7	0 58 33.76	4 48 45.9	1.9	20.3	1.44
8	9 48.4	1 3 22.08	5 4 37.6	2.2	23.2	1.65	24	6 42.9	0 58 44.58	4 50 13.3	1.9	20.2	1.43
9	9 44.1	1 3 0.35	5 2 37.5	2.2	23.1	1.64	25	6 39.2	0 58 56.14	4 51 45.3	1.9	20.2	1.43
10	9 39.8	1 2 39.19	+5 0 41.2	2.2	23.1	1.64	26	6 35.4	0 59 8.42	+4 53 21.7	1.9	20.1	1.42
11	9 35.5	1 2 18.62	4 58 48.8	2.2	23.0	1.63	27	6 31.7	0 59 21.42	4 55 2.5	1.9	20.1	1.42
12	9 31.3	1 1 58.64	4 57 0.3	2.2	23.0	1.63	28	6 28.0	0 59 35.15	4 56 47.7	1.9	20.0	1.41
13	9 27.0	1 1 39.27	4 55 15.9	2.1	22.9	1.63	29	6 24.3	0 59 49.59	4 58 37.2	1.9	19.9	1.41
14	9 22.8	1 1 20.52	4 53 35.5	2.1	22.9	1.62	30	6 20.6	1 0 4.73	5 0 31.0	1.9	19.8	1.40
15	9 18.5	1 1 2.42	+4 51 59.3	2.1	22.8	1.62	31	6 17.0	1 0 20.57	+5 2 29.0	1.9	19.8	1.40
16	9 14.3	1 0 44.96	+4 50 27.4	2.1	22.8	1.61	32	6 13.3	1 0 37.10	+5 4 31.2	1.8	19.7	1.40

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Polar Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s
Jan. 0	17 21.7	12 3 54.26	+2 1 19.0	1.0	8.5	0.60
1	17 17.8	12 3 57.78	2 1 14.7	1.0	8.5	0.60
2	17 14.0	12 4 0.91	2 1 13.1	1.0	8.5	0.60
3	17 10.1	12 4 3.65	2 1 14.0	1.0	8.5	0.60
4	17 6.2	12 4 5.98	2 1 17.6	1.0	8.5	0.61
5	17 2.3	12 4 7.92	+2 1 23.7	1.0	8.5	0.61
6	16 58.4	12 4 9.45	2 1 32.5	1.0	8.6	0.61
7	16 54.5	12 4 10.57	2 1 43.8	1.0	8.6	0.61
8	16 50.5	12 4 11.29	2 1 57.7	1.0	8.6	0.61
9	16 46.6	12 4 11.62	2 2 14.2	1.0	8.6	0.61
10	16 42.7	12 4 11.54	+2 2 33.2	1.0	8.6	0.61
11	16 38.8	12 4 11.07	2 2 54.8	1.0	8.6	0.61
12	16 34.8	12 4 10.20	2 3 18.9	1.0	8.6	0.62
13	16 30.9	12 4 8.93	2 3 45.6	1.0	8.7	0.62
14	16 26.9	12 4 7.27	2 4 14.7	1.0	8.7	0.62
15	16 22.9	12 4 5.21	+2 4 46.4	1.0	8.7	0.62
16	16 18.9	12 4 2.76	2 5 20.6	1.0	8.7	0.62
17	16 15.0	12 3 59.92	2 5 57.2	1.0	8.7	0.62
18	16 11.0	12 3 56.69	2 6 36.3	1.0	8.7	0.62
19	16 7.0	12 3 53.06	2 7 17.8	1.0	8.7	0.62
20	16 3.0	12 3 49.04	+2 8 1.8	1.0	8.8	0.62
21	15 59.0	12 3 44.64	2 8 48.2	1.0	8.8	0.62
22	15 55.0	12 3 39.85	2 9 37.0	1.0	8.8	0.63
23	15 51.0	12 3 34.67	2 10 28.2	1.0	8.8	0.63
24	15 46.9	12 3 29.11	2 11 21.8	1.0	8.8	0.63
25	15 42.9	12 3 23.17	+2 12 17.7	1.0	8.8	0.63
26	15 38.9	12 3 16.86	2 13 15.9	1.0	8.8	0.63
27	15 34.8	12 3 10.18	2 14 16.4	1.0	8.8	0.63
28	15 30.8	12 3 3.13	2 15 19.1	1.0	8.9	0.63
29	15 26.7	12 2 55.71	2 16 24.0	1.0	8.9	0.63
30	15 22.7	12 2 47.93	+2 17 31.1	1.0	8.9	0.63
31	15 18.6	12 2 39.80	2 18 40.4	1.0	8.9	0.63
Feb. 1	15 14.5	12 2 31.31	2 19 51.9	1.0	8.9	0.63
2	15 10.4	12 2 22.48	2 21 5.4	1.0	8.9	0.63
3	15 6.4	12 2 13.30	2 22 20.9	1.0	8.9	0.63
4	15 2.3	12 2 3.79	+2 23 38.4	1.0	8.9	0.63
5	14 58.2	12 1 53.95	2 24 57.9	1.0	9.0	0.63
6	14 54.1	12 1 43.78	2 26 19.3	1.0	9.0	0.63
7	14 50.0	12 1 33.29	2 27 42.5	1.0	9.0	0.63
8	14 45.9	12 1 22.49	2 29 7.6	1.0	9.0	0.63
9	14 41.7	12 1 11.38	+2 30 34.5	1.0	9.0	0.63
10	14 37.6	12 0 59.96	2 32 3.1	1.0	9.0	0.63
11	14 33.5	12 0 48.25	2 33 33.3	1.0	9.0	0.63
12	14 29.4	12 0 36.24	2 35 5.3	1.0	9.0	0.63
13	14 25.2	12 0 23.95	2 36 38.8	1.0	9.0	0.63
14	14 21.1	12 0 11.38	+2 38 13.9	1.0	9.1	0.63
15	14 16.9	11 59 58.54	+2 39 50.5	1.0	9.1	0.63
Feb. 15	14 16.9	11 59 58.54	+2 39 50.5	1.0	9.1	0.63
16	14 12.8	11 59 45.43	2 41 28.6	1.0	9.1	0.63
17	14 8.6	11 59 32.06	2 43 8.1	1.0	9.1	0.63
18	14 4.5	11 59 18.43	2 44 49.0	1.0	9.1	0.63
19	14 0.3	11 59 4.56	2 46 31.1	1.0	9.1	0.63
20	13 56.1	11 58 50.45	+2 48 14.6	1.0	9.1	0.63
21	13 52.0	11 58 36.10	2 49 59.3	1.0	9.1	0.63
22	13 47.8	11 58 21.53	2 51 45.1	1.0	9.1	0.63
23	13 43.6	11 58 6.75	2 53 32.0	1.0	9.1	0.63
24	13 39.4	11 57 51.75	2 55 20.0	1.0	9.2	0.63
25	13 35.3	11 57 36.55	+2 57 9.0	1.0	9.2	0.63
26	13 31.1	11 57 21.17	2 58 58.9	1.0	9.2	0.63
27	13 26.9	11 57 5.60	3 0 49.6	1.0	9.2	0.63
28	13 22.7	11 56 49.86	3 2 41.2	1.0	9.2	0.63
29	13 18.5	11 56 33.95	3 4 33.5	1.0	9.2	0.63
Mar. 1	13 14.3	11 56 17.88	+3 6 26.5	1.0	9.2	0.63
2	13 10.1	11 56 1.68	3 8 20.0	1.0	9.2	0.63
3	13 5.9	11 55 45.34	3 10 14.2	1.0	9.2	0.63
4	13 1.7	11 55 28.87	3 12 8.8	1.0	9.2	0.63
5	12 57.5	11 55 12.29	3 14 3.7	1.0	9.2	0.63
6	12 53.3	11 54 55.59	+3 15 59.0	1.0	9.2	0.63
7	12 49.1	11 54 38.80	3 17 54.7	1.0	9.2	0.63
8	12 44.8	11 54 21.92	3 19 50.5	1.0	9.2	0.63
9	12 40.6	11 54 4.95	3 21 46.5	1.0	9.2	0.63
10	12 36.4	11 53 47.92	3 23 42.6	1.0	9.2	0.63
11	12 32.2	11 53 30.82	+3 25 38.8	1.0	9.2	0.63
12	12 28.0	11 53 13.66	3 27 34.9	1.0	9.2	0.63
13	12 23.8	11 52 56.47	3 29 30.9	1.0	9.2	0.63
14	12 19.5	11 52 39.24	3 31 26.8	1.0	9.2	0.63
15	12 15.3	11 52 21.98	3 33 22.5	1.0	9.2	0.63
16	12 11.1	11 52 4.70	+3 35 17.9	1.0	9.2	0.63
17	12 6.9	11 51 47.42	3 37 13.0	1.0	9.2	0.63
18	12 2.6	11 51 30.14	3 39 7.8	1.0	9.2	0.63
19	11 58.4	11 51 12.86	3 41 2.1	1.0	9.2	0.63
20	11 54.2	11 50 55.60	3 42 56.0	1.0	9.2	0.63
21	11 50.0	11 50 38.38	+3 44 49.2	1.0	9.2	0.63
22	11 45.8	11 50 21.19	3 46 41.9	1.0	9.2	0.63
23	11 41.5	11 50 4.05	3 48 33.9	1.0	9.2	0.63
24	11 37.3	11 49 46.97	3 50 25.1	1.0	9.2	0.63
25	11 33.1	11 49 29.95	3 52 15.5	1.0	9.2	0.63
26	11 28.9	11 49 13.02	+3 54 5.0	1.0	9.2	0.63
27	11 24.7	11 48 56.17	3 55 53.7	1.0	9.2	0.63
28	11 20.5	11 48 39.42	3 57 41.3	1.0	9.2	0.63
29	11 16.3	11 48 22.77	3 59 27.9	1.0	9.2	0.63
30	11 12.1	11 48 6.24	4 1 13.4	1.0	9.2	0.63
31	11 7.9	11 47 49.83	+4 2 57.8	1.0	9.2	0.63
Apr. 1	11 3.7	11 47 33.55	+4 4 40.9	1.0	9.2	0.63

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Polar Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Polar Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Apr. 1	11 3.7	11 47 33.55	+4 4 40.9	1.0	9.2	0.63	May 17	7 54.7	11 39 28.07	+4 50 22.1	1.0	8.7	0.62
2	10 59.5	11 47 17.42	4 6 22.7	1.0	9.2	0.63	18	7 50.8	11 39 25.12	4 50 28.3	1.0	8.7	0.62
3	10 55.3	11 47 1.43	4 8 3.3	1.0	9.2	0.63	19	7 46.8	11 39 22.54	1 50 31.9	1.0	8.7	0.62
4	10 51.1	11 46 45.61	4 9 42.4	1.0	9.2	0.63	20	7 42.8	11 39 20.33	4 50 33.1	1.0	8.6	0.62
5	10 46.9	11 46 29.95	4 11 20.1	1.0	9.2	0.63	21	7 38.9	11 39 18.49	4 50 31.9	1.0	8.6	0.62
6	10 42.7	11 46 14.47	+4 12 56.4	1.0	9.2	0.63	22	7 34.9	11 39 17.03	+4 50 28.1	1.0	8.6	0.61
7	10 38.4	11 45 59.17	4 14 31.2	1.0	9.2	0.63	23	7 31.0	11 39 15.95	4 50 21.8	1.0	8.6	0.61
8	10 34.3	11 45 44.06	4 16 4.4	1.0	9.1	0.63	24	7 27.0	11 39 15.24	4 50 13.1	1.0	8.6	0.61
9	10 30.1	11 45 29.15	4 17 36.0	1.0	9.1	0.63	25	7 23.0	11 39 14.91	4 50 1.9	1.0	8.6	0.61
10	10 26.0	11 45 14.44	4 19 5.9	1.0	9.1	0.63	26	7 19.1	11 39 14.96	4 49 48.2	1.0	8.6	0.61
11	10 21.8	11 44 59.94	+4 20 34.2	1.0	9.1	0.63	27	7 15.2	11 39 15.38	+4 49 32.0	1.0	8.5	0.61
12	10 17.6	11 44 45.66	4 22 0.7	1.0	9.1	0.63	28	7 11.3	11 39 16.19	4 49 13.3	1.0	8.5	0.61
13	10 13.5	11 44 31.60	4 23 25.5	1.0	9.1	0.63	29	7 7.4	11 39 17.37	4 48 52.1	1.0	8.5	0.61
14	10 9.3	11 44 17.77	4 24 48.4	1.0	9.1	0.63	30	7 3.5	11 39 18.92	4 48 28.5	1.0	8.5	0.61
15	10 5.1	11 44 4.18	4 26 9.6	1.0	9.1	0.63	31	6 59.6	11 39 20.85	4 48 2.4	1.0	8.5	0.61
16	10 1.0	11 43 50.84	+4 27 28.9	1.0	9.1	0.63	June 1	6 55.7	11 39 23.16	+4 47 33.9	1.0	8.5	0.61
17	9 56.8	11 43 37.75	4 28 46.3	1.0	9.1	0.63	2	6 51.8	11 39 25.84	4 47 3.0	1.0	8.5	0.60
18	9 52.7	11 43 24.91	4 30 1.7	1.0	9.0	0.63	3	6 47.9	11 39 28.90	4 46 29.6	1.0	8.5	0.60
19	9 48.6	11 43 12.34	4 31 15.2	1.0	9.0	0.63	4	6 44.0	11 39 32.33	4 45 53.8	1.0	8.4	0.60
20	9 44.4	11 43 0.04	4 32 26.7	1.0	9.0	0.63	5	6 40.2	11 39 36.13	4 45 15.7	1.0	8.4	0.60
21	9 40.3	11 42 48.01	+4 33 36.1	1.0	9.0	0.63	6	6 36.3	11 39 40.30	+4 44 35.2	1.0	8.4	0.60
22	9 36.2	11 42 36.27	4 34 43.4	1.0	9.0	0.63	7	6 32.5	11 39 44.83	4 43 52.3	1.0	8.4	0.60
23	9 32.1	11 42 24.82	4 35 48.7	1.0	9.0	0.63	8	6 28.6	11 39 49.73	4 43 7.1	1.0	8.4	0.60
24	9 27.9	11 42 13.66	4 36 51.8	1.0	9.0	0.63	9	6 24.8	11 39 54.99	4 42 19.6	0.9	8.4	0.60
25	9 23.8	11 42 2.80	4 37 52.7	1.0	9.0	0.63	10	6 20.9	11 40 0.62	4 41 29.8	0.9	8.4	0.60
26	9 19.7	11 41 52.25	+4 38 51.4	1.0	9.0	0.63	11	6 17.1	11 40 6.61	+4 40 37.6	0.9	8.3	0.60
27	9 15.6	11 41 42.01	4 39 47.9	1.0	8.9	0.63	12	6 13.2	11 40 12.95	4 39 43.1	0.9	8.3	0.59
28	9 11.5	11 41 32.08	4 40 42.2	1.0	8.9	0.63	13	6 9.4	11 40 19.65	4 38 46.4	0.9	8.3	0.59
29	9 7.4	11 41 22.47	4 41 34.1	1.0	8.9	0.63	14	6 5.6	11 40 26.71	4 37 47.4	0.9	8.3	0.59
30	9 3.3	11 41 13.19	4 42 23.8	1.0	8.9	0.63	15	6 1.8	11 40 34.13	+4 36 46.1	0.9	8.3	0.59
May 1	8 59.3	11 41 4.23	+4 43 11.1	1.0	8.9	0.63	Dec. 16	19 0.5	12 46 49.71	−2 29 51.3	0.9	8.0	0.57
2	8 55.2	11 40 55.61	4 43 56.1	1.0	8.9	0.63	17	18 56.8	12 47 3.09	2 30 59.4	0.9	8.0	0.57
3	8 51.1	11 40 47.33	4 44 38.7	1.0	8.9	0.63	18	18 53.1	12 47 16.14	2 32 5.2	0.9	8.0	0.57
4	8 47.0	11 40 39.38	4 45 18.9	1.0	8.9	0.63	19	18 49.3	12 47 28.84	2 33 8.8	0.9	8.0	0.57
5	8 43.0	11 40 31.77	4 45 56.7	1.0	8.8	0.63	20	18 45.6	12 47 41.20	2 34 10.0	0.9	8.0	0.57
6	8 38.9	11 40 24.51	+4 46 32.2	1.0	8.8	0.63	21	18 41.9	12 47 53.21	−2 35 8.9	0.9	8.1	0.57
7	8 34.9	11 40 17.60	4 47 5.3	1.0	8.8	0.63	22	18 38.1	12 48 4.87	2 36 5.4	0.9	8.1	0.57
8	8 30.8	11 40 11.04	4 47 36.0	1.0	8.8	0.63	23	18 34.4	12 48 16.18	2 36 59.6	0.9	8.1	0.58
9	8 26.8	11 40 4.83	4 48 4.2	1.0	8.8	0.63	24	18 30.7	12 48 27.13	2 37 51.4	0.9	8.1	0.58
10	8 22.8	11 39 58.97	4 48 30.0	1.0	8.8	0.62	25	18 26.9	12 48 37.72	2 38 40.8	0.9	8.1	0.58
11	8 18.8	11 39 53.47	+4 48 53.4	1.0	8.8	0.62	26	18 23.1	12 48 47.95	−2 39 27.8	0.9	8.1	0.58
12	8 14.7	11 39 48.33	4 49 14.3	1.0	8.8	0.62	27	18 19.4	12 48 57.81	2 40 12.5	0.9	8.1	0.58
13	8 10.7	11 39 43.55	4 49 32.7	1.0	8.7	0.62	28	18 15.6	12 49 7.31	2 40 54.7	0.9	8.1	0.58
14	8 6.7	11 39 39.13	4 49 48.8	1.0	8.7	0.62	29	18 11.8	12 49 16.45	2 41 34.5	0.9	8.1	0.58
15	8 2.7	11 39 35.08	4 50 2.4	1.0	8.7	0.62	30	18 8.0	12 49 25.21	2 42 11.8	0.9	8.1	0.58
16	7 58.7	11 39 31.39	+4 50 13.5	1.0	8.7	0.62	31	18 4.2	12 49 33.60	−2 42 46.8	0.9	8.2	0.58
17	7 54.7	11 39 28.07	+4 50 22.1	1.0	8.7	0.62	32	18 0.4	12 49 41.61	−2 43 19.3	0.9	8.2	0.58

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 16	18 29.3	14 14 46.61	−13 0 11.6	0.5	1.8	0.12	Mar. 1	15 32.5	14 14 55.00	−13 0 0.1	0.5	1.9	0.13
17	18 25.5	14 14 51.45	13 0 35.2	0.5	1.8	0.12	2	15 28.5	14 14 50.47	12 59 35.9	0.5	1.9	0.13
18	18 21.6	14 14 56.08	13 0 57.7	0.5	1.8	0.12	3	15 24.5	14 14 45.76	12 59 10.7	0.5	1.9	0.13
19	18 17.7	14 15 0.51	13 1 19.2	0.5	1.8	0.12	4	15 20.5	14 14 40.87	12 58 44.6	0.5	1.9	0.13
20	18 13.9	14 15 4.73	13 1 39.5	0.5	1.8	0.12	5	15 16.5	14 14 35.80	12 58 17.6	0.5	1.9	0.13
21	18 10.0	14 15 8.74	−13 1 58.8	0.5	1.8	0.12	6	15 12.4	14 14 30.55	−12 57 49.7	0.5	1.9	0.13
22	18 6.1	14 15 12.54	13 2 17.0	0.5	1.8	0.12	7	15 8.4	14 14 25.12	12 57 21.0	0.5	1.9	0.13
23	18 2.3	14 15 16.12	13 2 34.1	0.5	1.8	0.12	8	15 4.4	14 14 19.53	12 56 51.4	0.5	1.9	0.13
24	17 58.4	14 15 19.50	13 2 50.2	0.5	1.8	0.12	9	15 0.4	14 14 13.77	12 56 20.9	0.5	1.9	0.13
25	17 54.5	14 15 22.66	13 3 5.1	0.5	1.8	0.12	10	14 56.3	14 14 7.84	12 55 49.6	0.5	1.9	0.13
26	17 50.6	14 15 25.61	−13 3 18.9	0.5	1.8	0.12	11	14 52.3	14 14 1.75	−12 55 17.5	0.5	1.9	0.13
27	17 46.8	14 15 28.35	13 3 31.6	0.5	1.8	0.12	12	14 48.3	14 13 55.50	12 54 44.5	0.5	1.9	0.13
28	17 42.9	14 15 30.87	13 3 43.2	0.5	1.8	0.12	13	14 44.2	14 13 49.09	12 54 10.8	0.5	1.9	0.13
29	17 39.0	14 15 33.17	13 3 53.7	0.5	1.8	0.12	14	14 40.2	14 13 42.52	12 53 36.2	0.5	1.9	0.13
30	17 35.1	14 15 35.26	13 4 3.1	0.5	1.8	0.12	15	14 36.2	14 13 35.80	12 53 0.9	0.5	1.9	0.13
31	17 31.2	14 15 37.13	−13 4 11.4	0.5	1.8	0.12	16	14 32.1	14 13 28.94	−12 52 24.8	0.5	1.9	0.13
Feb. 1	17 27.2	14 15 38.79	13 4 18.5	0.5	1.8	0.12	17	14 28.1	14 13 21.93	12 51 48.0	0.5	1.9	0.13
2	17 23.3	14 15 40.23	13 4 24.6	0.5	1.8	0.12	18	14 24.0	14 13 14.77	12 51 10.5	0.5	1.9	0.13
3	17 19.4	14 15 41.45	13 4 29.6	0.5	1.8	0.12	19	14 20.0	14 13 7.47	12 50 32.2	0.5	1.9	0.13
4	17 15.5	14 15 42.46	13 4 33.5	0.5	1.8	0.13	20	14 15.9	14 13 0.03	12 49 53.2	0.5	1.9	0.13
5	17 11.6	14 15 43.25	−13 4 36.3	0.5	1.8	0.13	21	14 11.9	14 12 52.46	−12 49 13.6	0.5	1.9	0.13
6	17 7.7	14 15 43.83	13 4 37.9	0.5	1.8	0.13	22	14 7.8	14 12 44.76	12 48 33.3	0.5	1.9	0.13
7	17 3.8	14 15 44.19	13 4 38.5	0.5	1.8	0.13	23	14 3.7	14 12 36.93	12 47 52.3	0.5	1.9	0.13
8	16 59.8	14 15 44.34	13 4 38.0	0.5	1.8	0.13	24	13 59.7	14 12 28.97	12 47 10.7	0.5	1.9	0.13
9	16 55.9	14 15 44.27	13 4 36.4	0.5	1.8	0.13	25	13 55.6	14 12 20.90	12 46 28.5	0.5	1.9	0.13
10	16 52.0	14 15 44.00	−13 4 33.8	0.5	1.8	0.13	26	13 51.5	14 12 12.71	−12 45 45.7	0.5	1.9	0.13
11	16 48.0	14 15 43.51	13 4 30.0	0.5	1.8	0.13	27	13 47.5	14 12 4.40	12 45 2.2	0.5	1.9	0.13
12	16 44.1	14 15 42.81	13 4 25.2	0.5	1.8	0.13	28	13 43.4	14 11 55.99	12 44 18.3	0.5	1.9	0.13
13	16 40.1	14 15 41.90	13 4 19.3	0.5	1.8	0.13	29	13 39.3	14 11 47.47	12 43 33.8	0.5	1.9	0.13
14	16 36.2	14 15 40.77	13 4 12.4	0.5	1.8	0 13	30	13 35.3	14 11 38.85	12 42 48.8	0.5	1.9	0.13
15	16 32.2	14 15 39.44	−13 4 4.4	0.5	1.8	0.13	31	13 31.2	14 11 30.13	−12 42 3.2	0.5	1.9	0.13
16	16 28.3	14 15 37.90	13 3 55.3	0.5	1.8	0.13	Apr. 1	13 27.1	14 11 21.31	12 41 17.2	0.5	1.9	0.13
17	16 24.3	14 15 36.16	13 3 45.2	0.5	1.8	0.13	2	13 23.0	14 11 12.41	12 40 30.8	0.5	1.9	0.13
18	16 20.3	14 15 34.20	13 3 34.0	0.5	1.9	0.13	3	13 19.0	14 11 3.43	12 39 44.0	0.5	1.9	0.13
19	16 16.4	14 15 32.04	13 3 21.8	0.5	1.9	0.13	4	13 14.9	14 10 54.36	12 38 56.7	0.5	1.9	0.13
20	16 12.4	14 15 29.68	−13 3 8.5	0.5	1.9	0.13	5	13 10.8	14 10 45.22	−12 38 8.9	0.5	1.9	0.13
21	16 8.4	14 15 27.10	13 2 54.2	0.5	1.9	0.13	6	13 6.7	14 10 36.01	12 37 20.9	0.5	1.9	0.13
22	16 4.5	14 15 24.33	13 2 38.9	0.5	1.9	0.13	7	13 2.6	14 10 26.73	12 36 32.5	0.5	1.9	0.13
23	16 0.5	14 15 21.35	13 2 22.5	0.5	1.9	0.13	8	12 58.5	14 10 17.38	12 35 43.7	0.5	1.9	0.13
24	15 56.5	14 15 18.18	13 2 5.1	0.5	1.9	0.13	9	12 54.4	14 10 7.97	12 34 54.7	0.5	1.9	0.13
25	15 52.5	14 15 14.80	−13 1 46.7	0.5	1.9	0.13	10	12 50.3	14 9 58.50	−12 34 5.4	0.5	1.9	0.13
26	15 48.5	14 15 11.22	13 1 27.3	0.5	1.9	0.13	11	12 46.2	14 9 48.99	12 33 15.8	0.5	1.9	0.13
27	15 44.5	14 15 7.45	13 1 7.0	0.5	1.9	0.13	12	12 42.1	14 9 39.42	12 32 26.0	0.5	1.9	0.13
28	15 40.5	14 15 3.49	13 0 45.7	0.5	1.9	0.13	13	12 38.1	14 9 29.81	12 31 35.9	0.5	1.9	0.13
29	15 36.5	14 14 59.34	13 0 23.4	0.5	1.9	0.13	14	12 34.0	14 9 20.16	12 30 45.6	0.5	1.9	0.13
Mar. 1	15 32.5	14 14 55.00	−13 0 0.1	0.5	1.9	0.13	15	12 29.9	14 9 10.47	−12 29 55.2	0.5	1.9	0.13
2	15 28.5	14 14 50.47	−12 59 35.9	0.5	1.9	0.13	16	12 25.8	14 9 0.75	−12 29 4.6	0.5	1.9	0.13

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Apr. 16	12 25.8	14 9 0.75	−12 29 4.6	0.5	1.9	0.13	June 1	9 18.1	14 2 9.48	−11 53 32.7	0.5	1.9	0.13
17	12 21.7	14 8 51.00	12 28 13.8	0.5	1.9	0.13	2	9 14.0	14 2 2.74	11 52 58.3	0.5	1.9	0.13
18	12 17.6	14 8 41.22	12 27 22.9	0.5	1.9	0.13	3	9 10.0	14 1 56.15	11 52 24.7	0.5	1.9	0.13
19	12 13.5	14 8 31.43	12 26 31.9	0.5	1.9	0.13	4	9 5.9	14 1 49.71	11 51 51.8	0.5	1.9	0.13
20	12 9.4	14 8 21.61	12 25 40.8	0.5	1.9	0.13	5	9 1.9	14 1 43.42	11 51 19.8	0.5	1.9	0.13
21	12 5.3	14 8 11.79	−12 24 49.6	0.5	1.9	0.13	6	8 57.9	14 1 37.28	−11 50 48.6	0.5	1.9	0.13
22	12 1.2	14 8 1.96	12 23 58.4	0.5	1.9	0.13	7	8 53.9	14 1 31.30	11 50 18.4	0.5	1.9	0.13
23	11 57.1	14 7 52.12	12 23 7.2	0.5	1.9	0.13	8	8 49.8	14 1 25.47	11 49 49.0	0.5	1.9	0.13
24	11 53.0	14 7 42.28	12 22 16.0	0.5	1.9	0.13	9	8 45.8	14 1 19.81	11 49 20.4	0.5	1.9	0.13
25	11 48.9	14 7 32.45	12 21 24.9	0.5	1.9	0.13	10	8 41.8	14 1 14.31	11 48 52.7	0.5	1.9	0.13
26	11 44.8	14 7 22.63	−12 20 33.8	0.5	1.9	0.13	11	8 37.8	14 1 8.97	−11 48 25.9	0.5	1.9	0.13
27	11 40.7	14 7 12.83	12 19 42.8	0.5	1.9	0.13	12	8 33.7	14 1 3.79	11 48 0.0	0.5	1.9	0.13
28	11 36.6	14 7 3.04	12 18 51.8	0.5	1.9	0.13	13	8 29.7	14 0 58.79	11 47 35.0	0.5	1.9	0.13
29	11 32.5	14 6 53.28	12 18 1.0	0.5	1.9	0.13	14	8 25.7	14 0 53.95	11 47 10.9	0.5	1.9	0.13
30	11 28.4	14 6 43.55	12 17 10.4	0.5	1.9	0.13	15	8 21.7	14 0 49.29	11 46 47.7	0.5	1.9	0.13
May 1	11 24.3	14 6 33.85	−12 16 20.0	0.5	1.9	0.13	16	8 17.7	14 0 44.80	−11 46 25.5	0.5	1.9	0.13
2	11 20.2	14 6 24.18	12 15 29.7	0.5	1.9	0.13	17	8 13.7	14 0 40.49	11 46 4.2	0.5	1.9	0.13
3	11 16.1	14 6 14.56	12 14 39.6	0.5	1.9	0.13	18	8 9.7	14 0 36.34	11 45 43.9	0.5	1.9	0.13
4	11 12.1	14 6 4.98	12 13 49.9	0.5	1.9	0.13	19	8 5.7	14 0 32.37	11 45 24.6	0.5	1.9	0.13
5	11 8.0	14 5 55.45	12 13 0.4	0.5	1.9	0.13	20	8 1.7	14 0 28.59	11 45 6.2	0.5	1.9	0.13
6	11 3.9	14 5 45.96	−12 12 11.1	0.5	1.9	0.13	21	7 57.7	14 0 24.99	−11 44 48.8	0.5	1.9	0.13
7	10 59.8	14 5 36.53	12 11 22.1	0.5	1.9	0.13	22	7 53.7	14 0 21.58	11 44 32.5	0.5	1.9	0.13
8	10 55.7	14 5 27.17	12 10 33.5	0.5	1.9	0.13	23	7 49.7	14 0 18.35	11 44 17.1	0.5	1.9	0.13
9	10 51.6	14 5 17.87	12 9 45.2	0.5	1.9	0.13	24	7 45.7	14 0 15.31	11 44 2.8	0.5	1.9	0.13
10	10 47.5	14 5 8.63	12 8 57.3	0.5	1.9	0.13	25	7 41.8	14 0 12.47	11 43 49.6	0.5	1.9	0.13
11	10 43.5	14 4 59.46	−12 8 9.7	0.5	1.9	0.13	26	7 37.8	14 0 9.81	−11 43 37.3	0.5	1.9	0.13
12	10 39.4	14 4 50.37	12 7 22.6	0.5	1.9	0.13	27	7 33.8	14 0 7.34	11 43 26.1	0.5	1.9	0.13
13	10 35.3	14 4 41.36	12 6 35.8	0.5	1.9	0.13	28	7 29.8	14 0 5.06	11 43 15.9	0.5	1.9	0.13
14	10 31.2	14 4 32.42	12 5 49.5	0.5	1.9	0.13	29	7 25.9	14 0 2.98	11 43 6.8	0.5	1.9	0.13
15	10 27.1	14 4 23.57	12 5 3.7	0.5	1.9	0.13	30	7 21.9	14 0 1.09	11 42 58.7	0.5	1.9	0.13
16	10 23.1	14 4 14.81	−12 4 18.4	0.5	1.9	0.13	July 1	7 17.9	13 59 59.39	−11 42 51.7	0.5	1.9	0.13
17	10 19.0	14 4 6.14	12 3 33.5	0.5	1.9	0.13	2	7 14.0	13 59 57.89	11 42 45.8	0.5	1.8	0.13
18	10 14.9	14 3 57.57	12 2 49.1	0.5	1.9	0.13	3	7 10.0	13 59 56.59	11 42 40.9	0.5	1.8	0.13
19	10 10.8	14 3 49.09	12 2 5.3	0.5	1.9	0.13	4	7 6.1	13 59 55.48	11 42 37.1	0.5	1.8	0.13
20	10 6.8	14 3 40.72	12 1 22.0	0.5	1.9	0.13	5	7 2.1	13 59 54.57	11 42 34.3	0.5	1.8	0.13
21	10 2.7	14 3 32.45	−12 0 39.3	0.5	1.9	0.13	6	6 58.2	13 59 53.86	−11 42 32.6	0.5	1.8	0.13
22	9 58.6	14 3 24.29	11 59 57.2	0.5	1.9	0.13	7	6 54.3	13 59 53.34	11 42 32.0	0.5	1.8	0.13
23	9 54.6	14 3 16.24	11 59 15.7	0.5	1.9	0.13	8	6 50.3	13 59 53.02	11 42 32.5	0.5	1.8	0.13
24	9 50.5	14 3 8.32	11 58 34.8	0.5	1.9	0.13	9	6 46.4	13 59 52.90	11 42 34.0	0.5	1.8	0.13
25	9 46.4	14 3 0.51	11 57 54.6	0.5	1.9	0.13	10	6 42.5	13 59 52.98	11 42 36.6	0.5	1.8	0.12
26	9 42.4	14 2 52.83	−11 57 15.0	0.5	1.9	0.13	11	6 38.5	13 59 53.25	−11 42 40.3	0.5	1.8	0.12
27	9 38.3	14 2 45.27	11 56 36.1	0.5	1.9	0.13	12	6 34.6	13 59 53.73	11 42 45.1	0.5	1.8	0.12
28	9 34.3	14 2 37.84	11 55 58.0	0.5	1.9	0.13	13	6 30.7	13 59 54.40	11 42 50.9	0.5	1.8	0.12
29	9 30.2	14 2 30.54	11 55 20.5	0.5	1.9	0.13	14	6 26.8	13 59 55.27	11 42 57.8	0.5	1.8	0.12
30	9 26.2	14 2 23.38	11 54 43.8	0.5	1.9	0.13	15	6 22.9	13 59 56.34	11 43 5.7	0.5	1.8	0.12
31	9 22.1	14 2 16.36	−11 54 7.8	0.5	1.9	0.13	16	6 18.9	13 59 57.61	−11 43 14.8	0.5	1.8	0.12
June 1	9 18.1	14 2 9.48	−11 53 32.7	0.5	1.9	0.13	17	6 15.0	13 59 59.08	−11 43 24.9	0.5	1.8	0.12

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	9 40.1	4 21 0.81	+19 51 18.6	0.3	1.3	0.09	Feb 15	6 36.9	4 18 39.44	+19 48 2.8	0.3	1.3	0.09
1	9 36.1	4 20 55.16	19 51 7.4	0.3	1.3	0.09	16	6 32.9	4 18 39.51	19 48 6.6	0.3	1.3	0.09
2	9 32.0	4 20 49.60	19 50 56.5	0.3	1.3	0.09	17	6 29.0	4 18 39.72	19 48 10.8	0.3	1.3	0.09
3	9 28.0	4 20 44.12	19 50 45.8	0.3	1.3	0.09	18	6 25.1	4 18 40.06	19 48 15.3	0.3	1.3	0.09
4	9 24.0	4 20 38.74	19 50 35.4	0.3	1.3	0.09	19	6 21.2	4 18 40.56	19 48 20.2	0.3	1.3	0.09
5	9 19.9	4 20 33.46	+19 50 25.3	0.3	1.3	0.09	20	6 17.2	4 18 41.19	+19 48 25.4	0.3	1.3	0.09
6	9 15.9	4 20 28.28	19 50 15.4	0.3	1.3	0.09	21	6 13.3	4 18 41.98	19 48 31.0	0.3	1.3	0.09
7	9 11.9	4 20 23.20	19 50 5.8	0.3	1.3	0.09	22	6 9.4	4 18 42.91	19 48 36.9	0.3	1.3	0.09
8	9 7.9	4 20 18.22	19 49 56.5	0.3	1.3	0.09	23	6 5.5	4 18 43.98	19 48 43.2	0.3	1.3	0.09
9	9 3.9	4 20 13.34	19 49 47.5	0.3	1.3	0.09	24	6 1.6	4 18 45.20	19 48 49.8	0.3	1.3	0.09
10	8 59.9	4 20 8.56	+19 49 38.8	0.3	1.3	0.09	25	5 57.7	4 18 46.56	+19 48 56.8	0.3	1.3	0.09
11	8 55.9	4 20 3.89	19 49 30.3	0.3	1.3	0.09	26	5 53.8	4 18 48.06	19 49 4.1	0.3	1.3	0.09
12	8 51.9	4 19 59.32	19 49 22.2	0.3	1.3	0.09	27	5 49.9	4 18 49.70	19 49 11.8	0.3	1.3	0.09
13	8 47.9	4 19 54.88	19 49 14.4	0.3	1.3	0.09	28	5 45.9	4 18 51.49	19 49 19.8	0.3	1.3	0.09
14	8 43.9	4 19 50.55	19 49 6.8	0.3	1.3	0.09	29	5 42.0	4 18 53.43	+19 49 28.2	0.3	1.3	0.09
15	8 39.9	4 19 46.33	+19 48 59.6	0.3	1.3	0.09	Sept. 1	17 51.6	4 39 48.98	+20 36 1.8	0.3	1.3	0.09
16	8 35.9	4 19 42.23	19 48 52.7	0.3	1.3	0.09	2	17 47.7	4 39 50.51	20 36 1.9	0.3	1.3	0.09
17	8 31.9	4 19 38.24	19 48 46.1	0.3	1.3	0.09	3	17 43.8	4 39 51.91	20 36 1.7	0.3	1.3	0.09
18	8 27.9	4 19 34.37	19 48 39.8	0.3	1.3	0.09	4	17 39.8	4 39 53.16	20 36 1.2	0.3	1.3	0.09
19	8 23.9	4 19 30.62	19 48 33.8	0.3	1.3	0.09	5	17 35.9	4 39 54.27	20 36 0.5	0.3	1.3	0.09
20	8 19.9	4 19 26.99	+19 48 28.2	0.3	1.3	0.09	6	17 32.0	4 39 55.26	+20 35 59.5	0.3	1.3	0.09
21	8 15.9	4 19 23.49	19 48 22.9	0.3	1.3	0.09	7	17 28.1	4 39 56.09	20 35 58.3	0.3	1.3	0.09
22	8 11.9	4 19 20.11	19 48 17.9	0.3	1.3	0.09	8	17 24.2	4 39 56.79	20 35 56.7	0.3	1.3	0.09
23	8 7.9	4 19 16.86	19 48 13.3	0.3	1.3	0.09	9	17 20.3	4 39 57.34	20 35 54.9	0.3	1.3	0.09
24	8 3.9	4 19 13.74	19 48 9.0	0.3	1.3	0.09	10	17 16.3	4 39 57.76	20 35 52.9	0.3	1.3	0.09
25	8 0.0	4 19 10.74	+19 48 5.0	0.3	1.3	0.09	11	17 12.4	4 39 58.04	+20 35 50.5	0.3	1.3	0.09
26	7 56.0	4 19 7.87	19 48 1.3	0.3	1.3	0.09	12	17 8.5	4 39 58.17	20 35 47.9	0.3	1.3	0.09
27	7 52.0	4 19 5.13	19 47 58.0	0.3	1.3	0.09	13	17 4.6	4 39 58.16	20 35 45.1	0.3	1.3	0.09
28	7 48.0	4 19 2.53	19 47 55.1	0.3	1.3	0.09	14	17 0.6	4 39 58.02	20 35 41.9	0.3	1.3	0.09
29	7 44.1	4 19 0.07	19 47 52.5	0.3	1.3	0.09	15	16 56.7	4 39 57.73	20 35 38.5	0.3	1.3	0.09
30	7 40.1	4 18 57.74	+19 47 50.3	0.3	1.3	0.09	16	16 52.8	4 39 57.29	+20 35 34.8	0.3	1.3	0.09
31	7 36.1	4 18 55.55	19 47 48.4	0.3	1.3	0.09	17	16 48.8	4 39 56.72	20 35 30.8	0.3	1.3	0.09
Feb. 1	7 32.1	4 18 53.50	19 47 46.8	0.3	1.3	0.09	18	16 44.9	4 39 56.01	20 35 26.6	0.3	1.3	0.09
2	7 28.2	4 18 51.58	19 47 45.6	0.3	1.3	0.09	19	16 40.9	4 39 55.16	20 35 22.1	0.3	1.3	0.09
3	7 24.2	4 18 49.80	19 47 44.8	0.3	1.3	0.09	20	16 37.0	4 39 54.16	20 35 17.4	0.3	1.3	0.09
4	7 20.3	4 18 48.15	+19 47 44.3	0.3	1.3	0.09	21	16 33.0	4 39 53.03	+20 35 12.5	0.3	1.3	0.09
5	7 16.3	4 18 46.65	19 47 44.2	0.3	1.3	0.09	22	16 29.1	4 39 51.76	20 35 7.3	0.3	1.3	0.09
6	7 12.4	4 18 45.29	19 47 44.5	0.3	1.3	0.09	23	16 25.1	4 39 50.36	20 35 1.8	0.3	1.3	0.09
7	7 8.4	4 18 44.07	19 47 45.1	0.3	1.3	0.09	24	16 21.2	4 39 48.81	20 34 56.1	0.3	1.3	0.09
8	7 4.5	4 18 43.00	19 47 46.1	0.3	1.3	0.09	25	16 17.2	4 39 47.12	20 34 50.1	0.3	1.3	0.09
9	7 0.5	4 18 42.06	+19 47 47.4	0.3	1.3	0.09	26	16 13.2	4 39 45.30	+20 34 43.9	0.3	1.3	0.09
10	6 56.6	4 18 41.27	19 47 49.1	0.3	1.3	0.09	27	16 9.3	4 39 43.35	20 34 37.4	0.3	1.3	0.09
11	6 52.6	4 18 40.62	19 47 51.1	0.3	1.3	0.09	28	16 5.3	4 39 41.27	20 34 30.7	0.3	1.3	0.09
12	6 48.7	4 18 40.11	19 47 53.5	0.3	1.3	0.09	29	16 1.3	4 39 39.05	20 34 23.8	0.3	1.3	0.09
13	6 44.7	4 18 39.74	19 47 56.2	0.3	1.3	0.09	30	15 57.4	4 39 36.69	20 34 16.6	0.3	1.3	0.09
14	6 40.8	4 18 39.52	+19 47 59.3	0.3	1.3	0.09	Oct. 1	15 53.4	4 39 34.20	+20 34 9.2	0.3	1.3	0.09
15	6 36.9	4 18 39.44	+19 48 2.8	0.3	1.3	0.09	2	15 49.4	4 39 31.58	+20 34 1.6	0.3	1.3	0.09

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	15 53.4	4 39 34.20	+20 34 9.2	0.3	1.3	0.09	Nov. 16	12 48.7	4 35 42.09	+20 25 9.9	0.3	1.3	0.09
2	15 49.4	4 39 31.58	20 34 1.6	0.3	1.3	0.09	17	12 44.6	4 35 35.21	20 24 55.4	0.3	1.3	0.09
3	15 45.5	4 39 28.83	20 33 53.7	0.3	1.3	0.09	18	12 40.6	4 35 28.29	20 24 40.9	0.3	1.3	0.09
4	15 41.5	4 39 25.96	20 33 45.6	0.3	1.3	0.09	19	12 36.5	4 35 21.34	20 24 26.3	0.3	1.3	0.09
5	15 37.5	4 39 22.96	20 33 37.3	0.3	1.3	0.09	20	12 32.5	4 35 14.36	20 24 11.7	0.3	1.3	0.09
6	15 33.5	4 39 19.83	+20 33 28.7	0.3	1.3	0.09	21	12 28.4	4 35 7.35	+20 23 57.2	0.3	1.3	0.09
7	15 29.5	4 39 16.58	20 33 20.0	0.3	1.3	0.09	22	12 24.4	4 35 0.32	20 23 42.6	0.3	1.3	0.09
8	15 25.5	4 39 13.20	20 33 11.0	0.3	1.3	0.09	23	12 20.3	4 34 53.27	20 23 28.0	0.3	1.3	0.09
9	15 21.5	4 39 9.69	20 33 1.8	0.3	1.3	0.09	24	12 16.3	4 34 46.19	20 23 13.3	0.3	1.3	0.09
10	15 17.5	4 39 6.06	20 32 52.4	0.3	1.3	0.09	25	12 12.2	4 34 39.09	20 22 58.7	0.3	1.3	0.09
11	15 13.5	4 39 2.31	+20 32 42.7	0.3	1.3	0.09	26	12 8.2	4 34 31.96	+20 22 44.0	0.3	1.3	0.09
12	15 9.5	4 38 58.45	20 32 32.9	0.3	1.3	0.09	27	12 4.1	4 34 24.82	20 22 29.4	0.3	1.3	0.09
13	15 5.5	4 38 54.47	20 32 22.9	0.3	1.3	0.09	28	12 0.1	4 34 17.68	20 22 14.9	0.3	1.3	0.09
14	15 1.5	4 38 50.38	20 32 12.7	0.3	1.3	0.09	29	11 56.0	4 34 10.54	20 22 0.3	0.3	1.3	0.09
15	14 57.5	4 38 46.17	20 32 2.3	0.3	1.3	0.09	30	11 52.0	4 34 3.39	20 21 45.8	0.3	1.3	0.09
16	14 53.5	4 38 41.84	+20 31 51.6	0.3	1.3	0.09	Dec. 1	11 47.9	4 33 56.25	+20 21 31.4	0.3	1.3	0.09
17	14 49.5	4 38 37.40	20 31 40.8	0.3	1.3	0.09	2	11 43.9	4 33 49.10	20 21 17.0	0.3	1.3	0.09
18	14 45.5	4 38 32.84	20 31 29.8	0.3	1.3	0.09	3	11 39.8	4 33 41.96	20 21 2.6	0.3	1.3	0.09
19	14 41.5	4 38 28.18	20 31 18.6	0.3	1.3	0.09	4	11 35.8	4 33 34.82	20 20 48.3	0.3	1.3	0.09
20	14 37.5	4 38 23.41	20 31 7.2	0.3	1.3	0.09	5	11 31.7	4 33 27.68	20 20 34.1	0.3	1.3	0.09
21	14 33.5	4 38 18.54	+20 30 55.7	0.3	1.3	0.09	6	11 27.7	4 33 20.57	+20 20 19.9	0.3	1.3	0.09
22	14 29.5	4 38 13.57	20 30 44.0	0.3	1.3	0.09	7	11 23.6	4 33 13.47	20 20 5.8	0.3	1.3	0.09
23	14 25.5	4 38 8.50	20 30 32.2	0.3	1.3	0.09	8	11 19.6	4 33 6.40	20 19 51.8	0.3	1.3	0.09
24	14 21.4	4 38 3.32	20 30 20.2	0.3	1.3	0.09	9	11 15.5	4 32 59.35	20 19 37.9	0.3	1.3	0.09
25	14 17.4	4 37 58.04	20 30 8.0	0.3	1.3	0.09	10	11 11.5	4 32 52.32	20 19 24.1	0.3	1.3	0.09
26	14 13.4	4 37 52.67	+20 29 55.7	0.3	1.3	0.09	11	11 7.4	4 32 45.31	+20 19 10.3	0.3	1.3	0.09
27	14 9.4	4 37 47.21	20 29 43.2	0.3	1.3	0.09	12	11 3.4	4 32 38.32	20 18 56.6	0.3	1.3	0.09
28	14 5.4	4 37 41.66	20 29 30.6	0.3	1.3	0.09	13	10 59.4	4 32 31.36	20 18 43.1	0.3	1.3	0.09
29	14 1.3	4 37 36.03	20 29 17.8	0.3	1.3	0.09	14	10 55.3	4 32 24.44	20 18 29.7	0.3	1.3	0.09
30	13 57.3	4 37 30.31	20 29 4.9	0.3	1.3	0.09	15	10 51.3	4 32 17.57	20 18 16.4	0.3	1.3	0.09
31	13 53.3	4 37 24.51	+20 28 51.9	0.3	1.3	0.09	16	10 47.2	4 32 10.75	+20 18 3.3	0.3	1.3	0.09
Nov. 1	13 49.2	4 37 18.62	20 28 38.8	0.3	1.3	0.09	17	10 43.2	4 32 3.96	20 17 50.3	0.3	1.3	0.09
2	13 45.2	4 37 12.64	20 28 25.5	0.3	1.3	0.09	18	10 39.1	4 31 57.22	20 17 37.4	0.3	1.3	0.09
3	13 41.2	4 37 6.58	20 28 12.1	0.3	1.3	0.09	19	10 35.1	4 31 50.53	20 17 24.6	0.3	1.3	0.09
4	13 37.1	4 37 0.46	20 27 58.7	0.3	1.3	0.09	20	10 31.0	4 31 43.88	20 17 12.0	0.3	1.3	0.09
5	13 33.1	4 36 54.27	+20 27 45.1	0.3	1.3	0.09	21	10 27.0	4 31 37.29	+20 16 59.6	0.3	1.3	0.09
6	13 29.1	4 36 48.02	20 27 31.4	0.3	1.3	0.09	22	10 23.0	4 31 30.77	20 16 47.3	0.3	1.3	0.09
7	13 25.0	4 36 41.70	20 27 17.6	0.3	1.3	0.09	23	10 18.9	4 31 24.31	20 16 35.3	0.3	1.3	0.09
8	13 21.0	4 36 35.31	20 27 3.7	0.3	1.3	0.09	24	10 14.9	4 31 17.92	20 16 23.4	0.3	1.3	0.09
9	13 17.0	4 36 28.85	20 26 49.7	0.3	1.3	0.09	25	10 10.8	4 31 11.59	20 16 11.7	0.3	1.3	0.09
10	13 12.9	4 36 22.32	+20 26 35.6	0.3	1.3	0.09	26	10 6.8	4 31 5.33	+20 16 0.2	0.3	1.3	0.09
11	13 8.9	4 36 15.74	20 26 21.5	0.3	1.3	0.09	27	10 2.8	4 30 59.14	20 15 48.8	0.3	1.3	0.09
12	13 4.8	4 36 9.10	20 26 7.3	0.3	1.3	0.09	28	9 58.7	4 30 53.01	20 15 37.6	0.3	1.3	0.09
13	13 0.8	4 36 2.41	20 25 53.0	0.3	1.3	0.09	29	9 54.7	4 30 46.96	20 15 26.7	0.3	1.3	0.09
14	12 56.8	4 35 55.68	20 25 38.7	0.3	1.3	0.09	30	9 50.7	4 30 41.00	20 15 16.0	0.3	1.3	0.09
15	12 52.7	4 35 48.91	+20 25 24.3	0.3	1.3	0.09	31	9 46.6	4 30 35.12	+20 15 5.5	0.3	1.3	0.09
16	12 48.7	4 35 42.09	+20 25 9.9	0.3	1.3	0.09	32	9 42.6	4 30 29.33	+20 14 55.2	0.3	1.3	0.09

PART III

PHENOMENA

ECLIPSES IN 1892.

In the year 1892 there will be four eclipses, two of the sun and two of the moon.

I.—*A Total Eclipse of the Sun*, 1892, April 26, invisible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ☌ in right ascension, April $26^{d}\ 9^{h}\ 13^{m}\ 26^{s}.7$

Sun and moon's R. A.	$2^{h}\ 18^{m}\ 52^{s}.05$	Hourly motions	$9^{s}.46$ and $142^{s}.29$
Sun's declination	$13^{\circ}\ 52'\ 47''.8$ N.	Hourly motion	$0'\ 47''.7$ N.
Moon's declination	12 53 8.7 N.	Hourly motion	15 38.3 N.
Sun's equa. hor. parallax	8.5	Sun's true semidiameter	15 53.0
Moon's equa. hor. parallax	61 15.7	Moon's true semidiameter	16 40.8

CIRCUMSTANCES OF THE ECLIPSE.

		Longitude from Greenwich.	Latitude.
Eclipse begins	April $26^{d}\ 7^{h}\ 46^{m}.9$	$175^{\circ}\ 23'.7$ E.	$57^{\circ}\ 26'.0$ S.
Central eclipse begins	26 9 8.5	147 58.5 W.	75 54.2 S.
Central eclipse at noon	26 9 13.4	138 58.2 W.	64 24.5 S.
Central eclipse ends	26 10 42.6	81 58.3 W.	36 53.3 S.
Eclipse ends	26 12 4.1	94 15.7 W.	10 28.7 S.

II.—*A Partial Eclipse of the Moon*, 1892, May 11, partly visible in Washington, the moon rising eclipsed. The beginning visible generally in the westerly portions of Asia, in Europe, Africa, the easterly portions of the Atlantic Ocean and the easterly portion of South America. The ending visible generally in Arabia Europe, Africa, the Atlantic Ocean, South America, and the extreme easterly portion of North America.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ☍ in right ascension, May $11^{d}\ 11^{h}\ 14^{m}\ 36^{s}.2$

Sun's right ascension	$3^{h}\ 16^{m}\ 57^{s}.72$	Hourly motion	$9^{s}.80$
Moon's right ascension	15 16 57.72	Hourly motion	118.98
Sun's declination	$18^{\circ}\ 11'\ 34''.1$ N.	Hourly motion	$0'\ 37''.6$ N.
Moon's declination	18 39 8.0 S.	Hourly motion	10 26.5 S.
Sun's equa. hor. parallax	8.5	Sun's true semidiameter	15 49.6
Moon's equa. hor. parallax	54 22.3	Moon's true semidiameter	14 48.3

TIMES OF THE PHASES

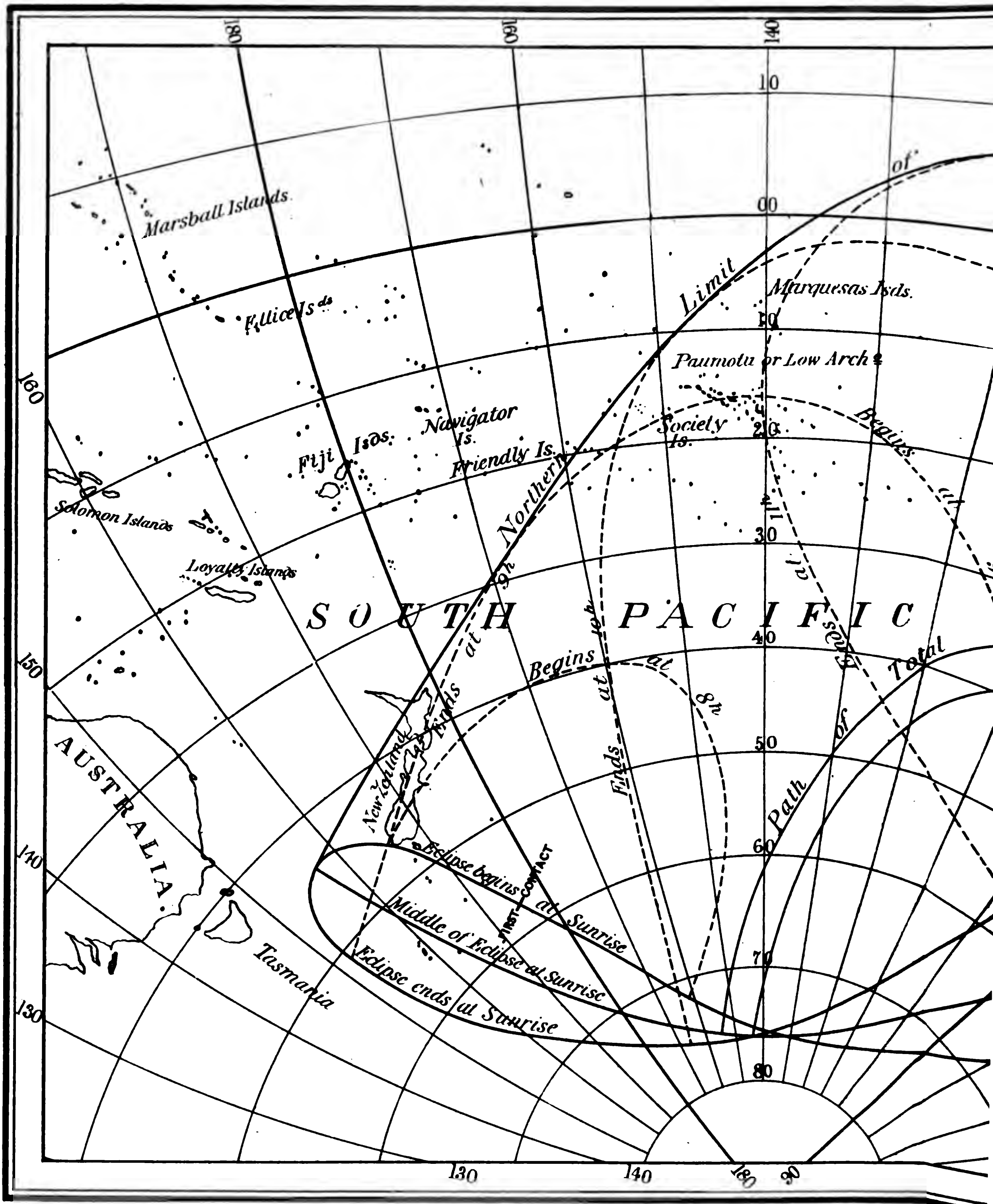
	Greenwich Mean Time.	Washington Mean Time.
Moon enters penumbra	May $11^{d}\ 7^{h}\ 54^{m}.4$	May $11^{d}\ 2^{h}\ 46^{m}.2$
Moon enters shadow	11 9 9.9	11 4 1.7
Middle of the eclipse	11 10 53.3	11 5 45.1
Moon leaves shadow	11 12 37.0	11 7 28.8
Moon leaves penumbra	11 13 52.8	11 8 44.6

CIRCUMSTANCES OF THE ECLIPSE.

Contacts of Shadow with moon's limb.	Angles of position from north point.	The moon being in the zenith in longitude from Greenwich	and in latitude.
First	83° to East.	$40^{\circ}\ 37'$ E.	$18^{\circ}\ 17'$ S.
Last	41 to West.	9 35 W.	18 52 S.

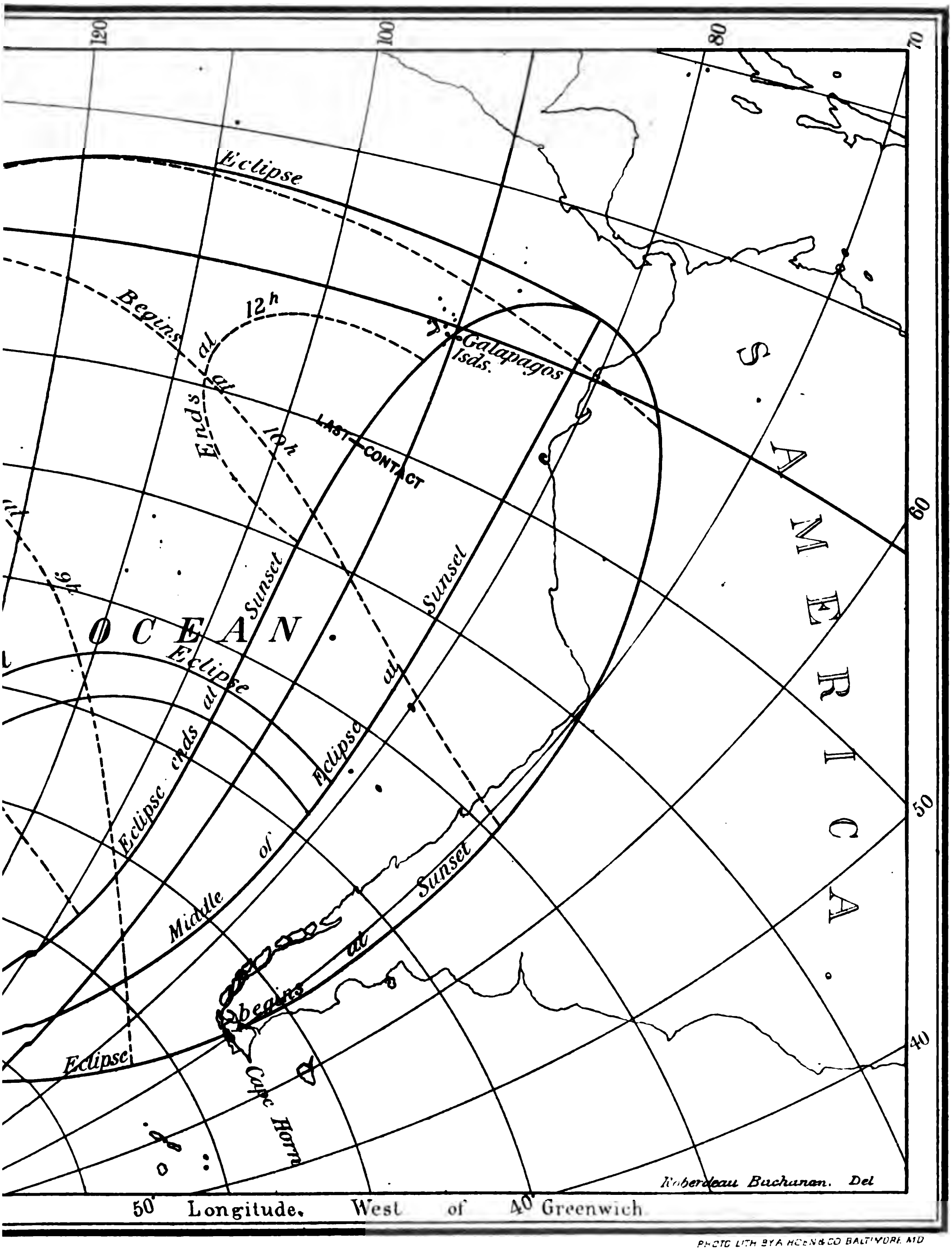
Magnitude of the eclipse = 0.959, (moon's diameter = 1).

TOTAL ECLIPSE OF



Note— *The hours of beginning and ending are*

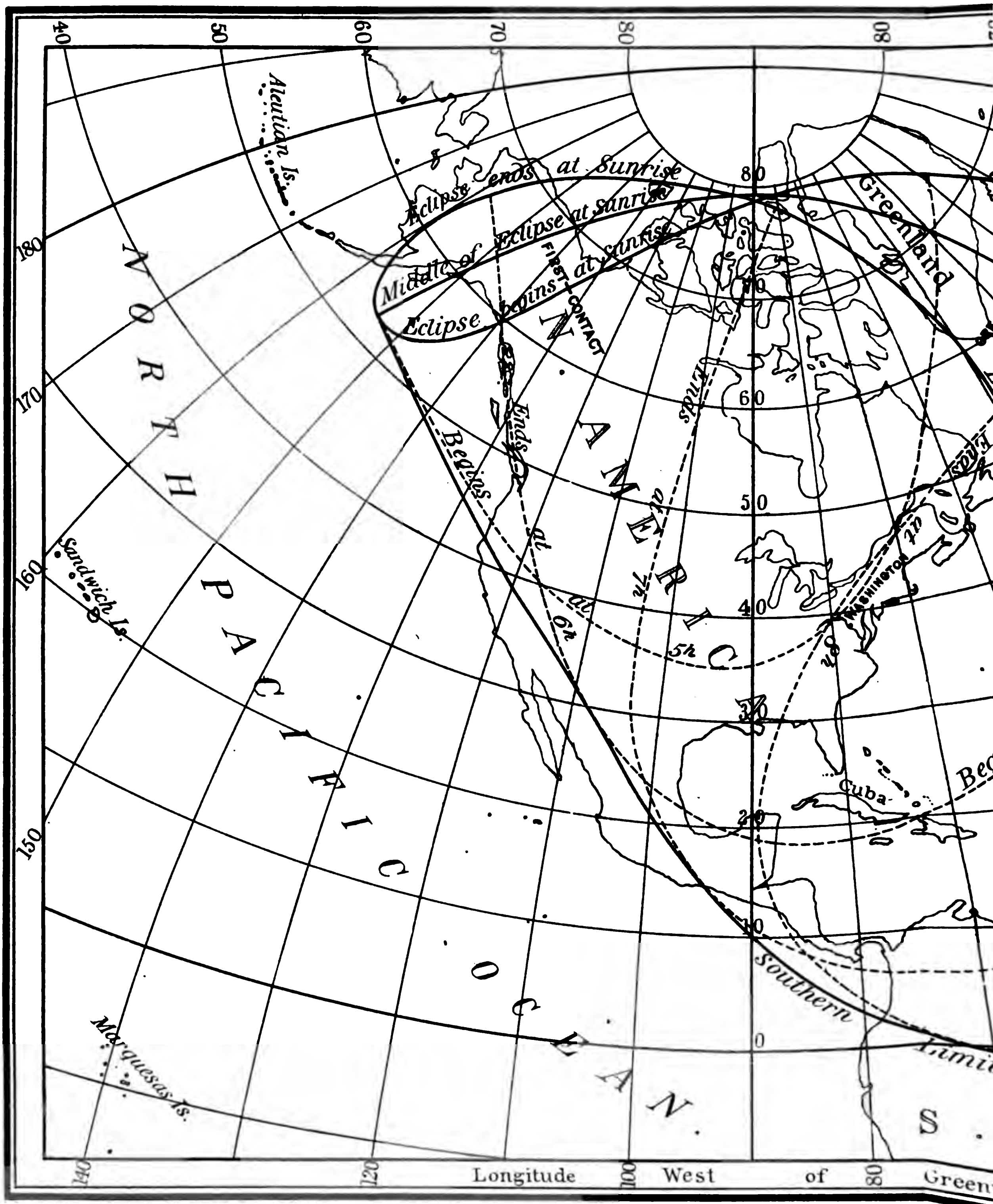
F APRIL 26TH 1892.



are expressed in Greenwich Mean Time.

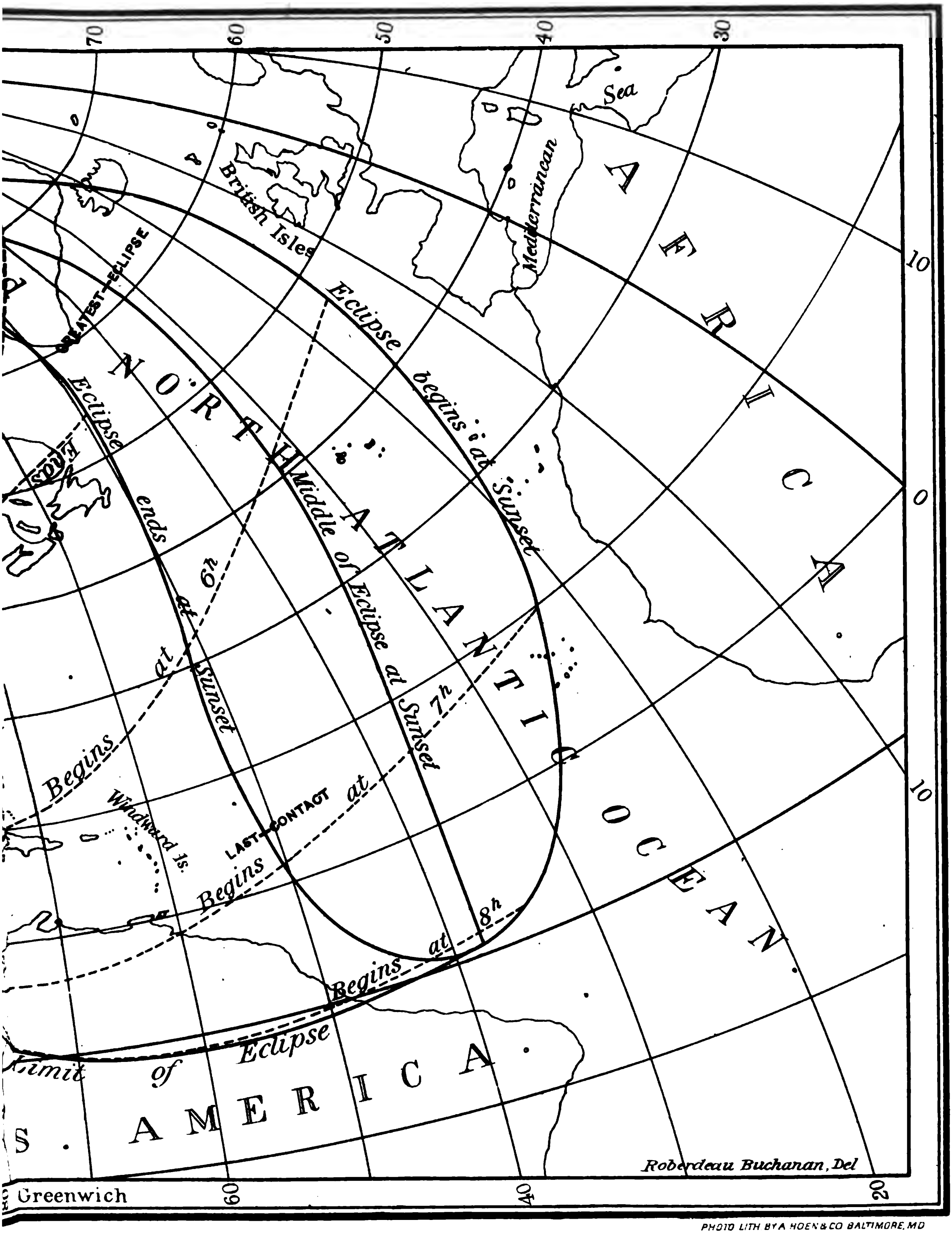
PHOTO LITH BY A HOEN & CO BALTIMORE MD

PARTIAL ECLIPSE OF O



Note– *The hours of beginning and ending are*

OCTOBER 20^{TH} 1892.



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ng are expressed in Greenwich Mean Time.

III.—*A Partial Eclipse of the Sun*, 1892, October 20, visible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ☌ in right ascension, October 20ᵈ 5ʰ 34ᵐ 46.5ˢ

	h m s		s s
Sun and moon's R. A.	13 43 15.16	Hourly motions	9.46 and 108.08
Sun's declination	10° 41′ 55″.3 S.	Hourly motion	0′ 53″.5 S.
Moon's declination	9 39 55.1 S.	Hourly motion	13 6.3 S.
Sun's equa. hor. parallax	8.6	Sun's true semidiameter	16 4.7
Moon's equa. hor. parallax	54 1.8	Moon's true semidiameter	14 42.7

CIRCUMSTANCES OF THE ECLIPSE.

		Longitude from Greenwich.	Latitude.
	d h m	° ′	° ′
Eclipse begins	October 20 4 15.4	133 16.5 W.	65 26.5 N.
Greatest eclipse	20 6 36.2	33 20.3 W.	61 35.2 N.
Eclipse ends	20 8 57.4	50 53.8 W.	14 3.4 N.

Magnitude of the eclipse = 0.906, (sun's diameter = 1).

IV.—*A Total Eclipse of the Moon*, 1892, November 4, invisible at Washington. The beginning visible generally in the north west portion of North America, the Pacific Ocean, Asia, and the easterly portions of Europe. The end visible generally in the north west Pacific Ocean, Australia, Asia, Europe (except England and Spain) and the east portions of Africa.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ☍ in right ascension, November 4ᵈ 4ʰ 3ᵐ 54.3ˢ

	h m s		s
Sun's right ascension	14 41 7.45	Hourly motion	9.93
Moon's right ascension	2 41 7.45	Hourly motion	146.83
Sun's declination	15° 40′ 11″.6 S.	Hourly motion	0′ 45″.7 S.
Moon's declination	16 8 44.7 N.	Hourly motion	14 56.0 N.
Sun's equa. hor. parallax	8.7	Sun's true semidiameter	16 8.5
Moon's equa. hor. parallax	61 28.2	Moon's true semidiameter	16 44.2

TIMES OF THE PHASES.

	Greenwich Mean Time.	Washington Mean Time.
	d h m	d h m
Moon enters penumbra	November 4 1 10.4	November 3 20 2.2
Moon enters shadow	4 2 8.9	3 21 0.7
Total eclipse begins	4 3 22.0	3 22 13.8
Middle of the eclipse	4 3 44.9	3 22 36.7
Total eclipse ends	4 4 7.8	3 23 59.6
Moon leaves shadow	4 5 21.2	4 0 13.0
Moon leaves penumbra	4 6 20.2	4 1 12.0

CIRCUMSTANCES OF THE ECLIPSE.

Contacts of Shadow with moon's limb.	Angles of position from north point.	The moon being in the zenith in longitude from Greenwich	and in latitude.
First	91° to East.	145° 7′ E.	15° 40′ N.
Last	138 to West.	98 52 E.	16 28 N.

Magnitude of the eclipse = 1.100, (moon's diameter = 1).

The regions within which the eclipses of the sun are visible, are laid down on the accompanying charts, from which, by means of the dotted lines, may also be found the Greenwich times of beginning and ending, within fifteen or twenty minutes.

BESSELIAN ELEMENTS OF THE TOTAL ECLIPSE OF THE SUN, 1892, APRIL 26.

Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow on Fundamental Plane.	
	x	y	Log sin d	Log cos d	μ	l	l'
h m					° ′		
7 40	−0.82449	−1.35441	+9.37947	+9.98716	115 36.2	+0.53266	−0.01316
50	0.73627	1.31391	9.37953	9.98715	118 6.3	0.53267	0.01314
8 0	−0.64805	−1.27341	+9.37960	+9.98715	120 36.3	+0.53268	−0.01313
10	0.55982	1.23291	9.37966	9.98715	123 6.3	0.53269	0.01312
20	0.47159	1.19241	9.37972	9.98714	125 36.4	0.53270	0.01311
30	0.38336	1.15191	9.37979	9.98714	128 6.4	0.53271	0.01310
40	0.29513	1.11141	9.37985	9.98714	130 36.4	0.53272	0.01309
50	0.20689	1.07092	9.37991	9.98713	133 6.4	0.53273	0.01308
9 0	−0.11865	−1.03043	+9.37998	+9.98713	135 36.5	+0.53274	−0.01307
10	−0.03040	0.98994	9.38004	9.98713	138 6.5	0.53275	0.01306
20	+0.05785	0.94945	9.38011	9.98712	140 36.5	0.53276	0.01305
30	0.14610	0.90896	9.38017	9.98712	143 6.6	0.53277	0.01304
40	0.23435	0.86847	9.38024	9.98711	145 36.6	0.53277	0.01304
50	0.32260	0.82799	9.38030	9.98711	148 6.6	0.53278	0.01303
10 0	+0.41085	−0.78751	+9.38037	+9.98710	150 36.7	+0.53278	−0.01303
10	0.49911	0.74703	9.38043	9.98710	153 6.7	0.53278	0.01303
20	0.58736	0.70656	9.38050	9.98709	155 36.7	0.53279	0.01302
30	0.67561	0.66609	9.38056	9.98709	158 6.8	0.53279	0.01302
40	0.76386	0.62562	9.38063	9.98709	160 36.8	0.53279	0.01302
50	0.85211	0.58515	9.38069	9.98708	163 6.8	0.53280	0.01302
11 0	+0.94036	−0.54468	+9.38076	+9.98708	165 36.8	+0.53280	−0.01301
10	1.02861	0.50422	9.38082	9.98708	168 6.9	0.53280	0.01301
20	1.11686	0.46376	9.38089	9.98707	170 36.9	0.53280	0.01301
30	1.20511	0.42330	9.38095	9.98707	173 6.9	0.53280	0.01301
40	1.29336	0.38285	9.38102	9.98707	175 36.9	0.53279	0.01302
50	1.38161	0.34240	9.38108	9.98706	178 7.0	0.53279	0.01302
12 0	+1.46985	−0.30195	+9.38115	+9.98706	180 37.0	+0.53279	−0.01302

Greenwich Mean Time.	Log Δ x for 1 Minute.	Log Δ y for 1 Minute.	Log Δ μ for 1 Minute.	Log Tangents of Angles of Cones—	
				Penumbra.	Shadow.
h m					
7 0	+7.9455	+7.6075	+1.1762	+7.66675	+7.66463
8 0	7.9456	7.6075	1.1762	7.66674	7.66463
9 0	7.9457	7.6074	1.1762	7.66674	7.66462
10 0	7.9457	7.6072	1.1762	7.66673	7.66462
11 0	7.9457	7.6071	1.1762	7.66673	7.66462
12 0	+7.9457	+7.6069	+1.1762	+7.66672	+7.66461

PATH OF THE SHADOW DURING THE TOTAL ECLIPSE OF THE SUN, 1892, APRIL 26.

Greenwich Mean Time.	Northern Limit of Shadow Path.		Central Line.		Southern Limit of Shadow Path.		Duration of Totality on Central Line.
	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	
	° ′	° ′	° ′	° ′	° ′	° ′	m s
Limits	−75 27.4	154 41.3 W.	−75 54.2	147 58.5 W.	−76 4.2	143 4.5 W.	
9^h 10^m	63 38.9	142 47.8	69 32.5	143 5.0			3 14.5
15	59 44.2	138 43.0	62 45.6	137 38.7	−65 47.0	136 34.5 W.	3 33.4
20	56 10.2	135 30.9	58 33.7	134 15.4	60 57.2	132 59.9	3 45.2
25	53 12.3	132 53.7	55 17.0	131 34.1	57 21.1	130 14.4	3 54.1
9 30	−50 38.3	130 36.5	−52 31.7	129 14.6	−54 25.1	127 52.7	4 1.1
35	48 21.4	128 31.8	50 7.3	127 8.2	51 53.3	125 44.6	4 6.8
40	46 17.8	126 34.5	47 58.3	125 9.5	49 38.9	123 44.6	4 10.9
45	44 25.5	124 41.9	46 2.1	123 15.4	47 38.8	121 48.9	4 14.0
50	42 42.6	122 51.4	44 16.3	121 23.1	45 50.0	119 54.8	4 15.9
55	41 7.8	121 0.6	42 39.4	119 30.1	44 11.1	117 59.7	4 16.8
10 0	−39 40.5	119 7.9	−41 10.7	117 34.8	−42 41.0	116 1.7	4 16.5
5	38 20.4	117 11.7	39 49.5	115 35.2	41 18.7	113 58.8	4 15.1
10	37 7.1	115 9.8	38 35.6	113 29.2	40 4.2	111 48.8	4 12.6
15	36 0.6	112 59.7	37 29.2	111 13.4	38 57.9	109 27.1	4 8.8
20	35 1.6	110 37.8	36 31.0	108 43.7	38 0.5	106 49.6	4 3.8
25	34 10.8	107 59.6	35 42.0	105 54.0	37 13.3	103 48.5	3 57.0
10 30	−33 29.8	104 57.5	−35 4.8	102 33.4	−36 39.7	100 9.3	3 48.4
35	33 1.8	101 18.8	34 44.9	98 19.1	36 28.0	95 19.3	3 37.1
40	33 2.1	96 45.0	35 8.8	91 58.0	37 15.4	87 10.9	3 19.4
Limits	−35 13.3	82 20.6 W.	−36 53.2	81 58.3 W.	−38 19.6	81 53.6 W.	

BESSELIAN ELEMENTS OF THE PARTIAL ECLIPSE OF THE SUN, 1892, OCTOBER 20.

Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra on Fundamental Plane.
	x	*y*	Log sin *d*	Log cos *d*	*μ*	*l*
h m 4 10	−0.63726	+1.47064	−9.26797	+9.99241	66° 19′.1	+0.57124
20	0.56209	1.43289	9.26807	9.99240	68 49.2	0.57125
30	0.48692	1.39514	9.26816	9.99240	71 19.2	0.57126
40	0.41175	1.35739	9.26826	9 99240	73 49.2	0.57127
50	0.33658	1.31964	9.26836	9.99239	76 19.2	0.57128
5 0	−0.26141	+1.28188	−9.26845	+9.99239	78 49.3	+0.57129
10	0.18624	1.24413	9.26855	9.99239	81 19.3	0.57130
20	0.11107	1.20638	9.26865	9.99238	83 49.3	0.57131
30	−0.03590	1.16862	9.26874	9.99238	86 19.4	0.57132
40	+0.03928	1.13087	9.26884	9.99238	88 49.4	0.57133
50	0.11445	1.09312	9.26894	9.99237	91 19.4	0.57133
6 0	+0.18963	+1.05537	−9.26903	+9.99237	93 49.4	+0.57134
10	0.26480	1.01762	9.26913	9.99237	96 19.5	0.57135
20	0.33998	0.97988	9.26922	9.99236	98 49.5	0.57135
30	0.41516	0.94213	9.26932	9.99236	101 19.5	0.57136
40	0.49033	0.90439	9.26941	9.99236	103 49.5	0.57137
50	0.56551	0.86664	9.26951	9.99235	106 19.6	0.57137
7 0	+0.64069	+0.82890	−9.26960	+9.99235	108 49.6	+0.57138
10	0.71587	0.79116	9.26970	9.99235	111 19.6	0.57138
20	0.79105	0.75342	9.26979	9.99234	113 49.7	0.57138
30	0.86623	0.71568	9.26989	9.99234	116 19.7	0.57138
40	0.94141	0.67795	9.26999	9.99234	118 49.7	0.57138
50	1.01660	0.64021	9.27008	9.99233	121 19.7	0.57139
8 0	+1.09178	+0.60248	−9.27018	+9.99233	123 49.8	+0.57139
10	1.16696	0.56475	9.27028	9.99233	126 19.8	0.57139
20	1.24214	0.52702	9.27037	9.99232	128 49.8	0.57139
30	1.31732	0.48929	9.27047	9.99232	131 19.8	0.57139
40	1.39250	0.45156	9.27056	9.99232	133 49.9	0.57139
50	1.46768	0.41383	9.27066	9.99231	136 19.9	0.57139
9 0	+1.54285	+0.37611	−9.27075	+9.99231	138 49.9	+0.57139

Greenwich Mean Time.	Log Δ *x* for 1 Minute.	Log Δ *y* for 1 Minute.	Log Δ *μ* for 1 Minute.	Log Tangent of Angle of Cone—
h m				Penumbra.
4 0	7.8760	−7.5770	1.1762	7.67215
5 0	7.8760	7.5769	1.1762	7.67216
6 0	7.8761	7.5769	1.1762	7.67216
7 0	7.8761	7.5768	1.1762	7.67217
8 0	7.8761	7.5767	1.1762	7.67217
9 0	7.8761	−7.5766	1.1762	7.67218

WASHINGTON MEAN TIME.

PHASES OF THE MOON.

New Moon.				First Quarter.				Full Moon.				Last Quarter.			
	d	h	m		d	h	m		d	h	m		d	h	m
				January	6	8	3.9	January	13	10	18.5	January	21	10	34.4
January	28	23	30.3	February	4	16	30.7	February	12	2	29.9	February	20	7	6.5
February	27	10	39.1	March	5	2	6.1	March	12	19	47.2	March	21	0	8.1
March	27	20	9.6	April	3	13	13.0	April	11	13	17.8	April	19	12	52.2
April	26	4	38.3	May	3	2	3.3	May	11	5	50.8	May	18	21	44.4
May	25	12	40.9	June	1	16	42.9	June	9	20	24.1	June	17	3	52.5
June	23	20	58.4	July	1	9	4.8	July	9	8	35.3	July	16	8	39.4
July	23	6	22.4	July	31	2	36.8	August	7	18	49.0	August	14	13	29.0
August	21	17	50.7	August	29	20	20.7	September	6	3	59.3	September	12	19	41.3
September	20	8	8.0	September	28	13	10.8	October	5	13	3.4	October	12	4	29.3
October	20	1	15.8	October	28	4	18.1	November	3	22	41.1	November	10	16	53.7
November	18	20	10.7	November	26	17	19.6	December	3	9	9.0	December	10	9	21.4
December	18	15	4.6	December	26	4	14.3								

PERIGEE, APOGEE, AND GREATEST LIBRATION.

Perigee.			Apogee.			Greatest Libration.									
	d	h		d	h		d	h	m			d	h	m	
January	5	0.0	January	19	22.1	January	13	7	8	W.	January	26	3	5	E.
January	31	16.1	February	16	16.7	February	8	9	38	W.	February	23	4	40	E.
February	28	18.7	March	15	4.6	March	6	13	2	W.	March	22	10	6	E.
March	28	4.9	April	11	6.3	April	3	13	50	W.	April	19	16	14	E.
April	25	16.1	May	8	12.2	May	1	19	46	W.	May	'17	12	27	E.
May	23	23.4	June	5	1.5	May	30	0	22	W.	June	13	11	32	E.
June	20	21.2	July	2	19.1	June	26	22	46	W.	July	9	18	57	E.
July	17	9.4	July	30	13.4	July	24	9	34	W.	August	5	21	32	E.
August	11	17.4	August	27	8.2	August	20	0	5	W.	September	2	16	7	E.
September	8	5.9	September	24	0.9	September	15	11	2	W.	October	0	19	59	E.
October	6	11.4	October	21	10.5	October	13	1	5	W.	October	29	3	0	E.
November	3	22.8	November	17	12.0	November	10	4	59	W.	November	26	8	23	E.
December	2	11.2	December	14	20.2	December	8	12	40	W.	December	24	0	3	E.
December	30	19.0				December	5	17	49	W.					

FORMULÆ FOR THE LIBRATION OF THE MOON.

Put I, the inclination of the moon's equator to the ecliptic ($= 1^\circ\ 28'.8$),

Ω, the mean longitude of the moon's ascending node, (see page 278), or the mean longitude of the descending node of the moon's equator,

C, the angle at the centre of the moon's disk made by a lunar meridian with the circle of declination, counted from north to east on the apparent disk,

λ, β, a', δ', the apparent longitude, latitude, right ascension, and declination of the moon, corrected for parallax,

λ', the selenocentric longitude of the earth, counted on the moon's equator from its descending node, Ω,

i, Δ, Ω', ☾, the quantities defined on page 276, where their values for the year are given.

The moon's libration in longitude and latitude may then be found, for any time, by means of the following formulæ, in connection with the tables given on pages 276 and 277:—

$$\left.\begin{aligned} \Delta\lambda &= -\ 0'.57 \sin 2\,(\Omega - \lambda) \\ a &= \sin I \cos\,(\Omega - \lambda) \\ \tan B &= \tan I \sin\,(\Omega - \lambda) \\ \lambda' &= \lambda + \Delta\lambda + a\,b \end{aligned}\right\}\ \textit{See table, page 277.}$$

$$\text{The libration in latitude} = b = B - \beta$$

$$\text{The libration in longitude} = l = \lambda' - ☾$$

$$\sin C = \sin i\,\frac{\cos\,(\lambda' + \Delta - \Omega)}{\cos\delta'} = -\sin i\,\frac{\cos\,(a' - \Omega)}{\cos b}$$

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
χ Capricorni	5.4	-2.01	-13.0	-21 37.7	1 18 36.8	- 7 39.3	-0.4684	0.5746	+0.1580	+ 5	-73
27 Capricorni	6.5	2.00	12.8	20 59.5	19 1.6	- 7 15.4	-1.0540	0.5745	0.1591	-30	-90
φ Capricorni	5.5	1.98	12.9	21 6.1	21 33.0	- 4 49.7	-0.5340	0.5725	0.1646	+ 2	-78
33 Capricorni	5.7	1.94	13.2	21 18.7	2 1 6.3	- 1 24.3	+0.2808	0.5707	0.1726	+45	-27
35 Capricorni	6.2	1.91	13.5	21 40.0	2 23.6	- 0 9.9	+0.8676	0.5694	0.1756	+68	+ 6
37 Capricorni	6.0	-1.88	-13.3	-20 34.0	5 36.5	+ 2 55.9	+0.3208	0.5678	+0.1822	+49	-25
ε Capricorni	4.7	1.87	13.4	19 57.1	6 33.3	+ 3 50.6	-0.1342	0.5674	0.1841	+25	-50
κ Capricorni	5.0	1.84	13.3	19 21.7	8 54.9	+ 6 7.0	-0.2937	0.5665	0.1888	+17	-60
B. A. C. 7550	6.3	1.83	13.4	20 6.9	9 9.1	+ 6 20.6	+0.5178	0.5663	0.1894	+61	-14
29 Aquarii *mult.*	6.5	1.73	13.2	17 29.2	17 24.5	- 9 41.9	-0.5271	0.5613	0.2051	+ 7	-77
56 Aquarii	6.3	-1.58	-12.4	-15 8.4	3 5 36.8	+ 2 4.4	-0.2860	0.5544	+0.2248	+22	-59
τ¹ Aquarii *mult.*	5.8	1.48	12.0	14 37.7	13 23.2	+ 9 34.8	+0.9797	0.5495	0.2352	+75	+12
τ² Aquarii	4.1	1.47	11.8	14 9.9	14 14.3	+10 23.9	+0.7145	0.5490	0.2363	+76	- 5
74 Aquarii	6.0	1.45	11.8	12 11.6	16 0.0	-11 54.0	-0.8666	0.5482	0.2385	- 8	-90
ψ¹ Aquarii	4.1	1.34	11.2	9 40.8	4 2 11.5	- 2 3.2	-0.9222	0.5437	0.2497	- 9	-90
ψ² Aquarii	4.2	-1.32	-11.0	- 9 46.4	3 8.2	- 1 8.5	-0.6929	0.5434	+0.2507	+ 9	-81
ψ³ Aquarii	4.8	1.32	10.7	10 12.2	3 37.2	- 0 40.4	-0.0338	0.5433	0.2510	+38	-44
B. A. C. 8274	7.0	1.16	9.5	6 59.0	17 21.6	-11 23.4	+0.2274	0.5374	0.2610	+54	-31
4 Ceti	6.0	1.08	8.4	3 9.1	5 2 22.6	- 2 40.1	-1.2740	0 5353	0.2653	-34	-90
5 Ceti	6.0	1.07	8.0	3 3.1	2 36.0	- 2 27.2	-1.3150	0.5358	0.2655	-39	-90
14 Ceti	6.0	-0.93	- 6.6	- 1 6.0	15 32.1	+10 3.7	+0.1605	0.5338	+0.2686	+51	-34
15 Ceti	6.8	0.93	6.2	- 1 5.9	16 44.7	+11 13.9	+0.4864	0.5338	0.2686	+72	-18
f Piscium	5.1	0.73	4.3	+ 3 2.7	6 11 34.2	+ 5 26.9	+1.3220	0.5343	0.2649	+88	+40
96 Piscium	6.6	0.69	2.7	6 44.1	16 51.2	+10 33.6	-1.0260	0.5359	0.2628	-13	-83
μ Piscium	5.0	0.68	3.1	5 35.1	17 22.7	+11 4.0	+0.2814	0.5360	0.2626	+58	-27
o Piscium	4.4	-0.62	- 1.6	+ 8 36.7	7 0 30.2	- 6 2.5	-0.9376	0.5370	+0.2580	- 8	-81
o Arietis	6.0	0.34	+ 1.9	14 51.2	8 3 37.1	- 3 50.0	-0.6230	0.5478	0.2306	+10	-72
σ Arietis	5.5	0.30	2.0	14 38.2	6 44.1	- 0 49.4	+0.3107	0.5490	0.2264	+61	-21
53 Arietis	6.3	0.23	3.2	17 27.7	13 46.9	+ 5 58.7	-1.0140	0.5528	0.2158	-15	-73
13 Tauri	5.7	0.05	4.3	19 21.2	9 4 55.9	- 3 24.6	+0.1279	0.5614	0.1894	+50	-26
14 Tauri	6.3	-0.04	+ 4.2	+19 19.5	5 33.3	- 2 48.5	+0.2766	0.5618	+0.1880	+59	-18
B. A. C. 1143	6.0	-0.05	4.6	20 35.3	5 50.0	- 2 32.4	-0.9659	0.5619	0.1875	-13	-69
B. A. C. 1242	6.3	+0.04	4.5	19 53.8	12 55.4	+ 4 17.6	+1.0240	0.5657	0.1732	+90	+26
A¹ Tauri	4.7	0.05	5.1	21 47.2	14 23.7	+ 5 42.6	-0.6631	0.5663	0.1700	+ 6	-67
A² Tauri	6.3	0.05	5.1	21 43.1	14 39.8	+ 5 58.1	-0.5469	0.5663	0.1693	+13	-61
51 Tauri	6.0	+0.12	+ 5.1	+21 18.9	20 8.6	+11 14.7	+0.7636	0.5699	+0.1574	+90	+11
56 Tauri	6.0	0.13	5.1	21 30.7	20 39.2	+11 44.2	+0.6403	0.5702	0.1562	+89	+ 5
κ¹ Tauri	4.7	0.15	5.5	22 2.8	23 1.9	- 9 58.4	+0.4572	0.5711	0.1507	+72	- 5
κ² Tauri	6.3	0.15	5.5	21 57.2	23 3.2	- 9 57.2	+0.5566	0.5705	0.1507	+81	+ 1
υ¹ Tauri	4.7	0.15	5.3	22 34.1	23 24.7	- 9 36.4	-0.0240	0.5712	0.1491	+41	-29
υ² Tauri	6.0	+0.16	+ 5.4	+22 45.1	23 49.3	- 9 12.8	-0.1508	0.5714	+0.1488	+34	-36
τ Tauri	4.5	0.23	5.4	22 44.9	10 5 59.3	- 3 16.8	+0.7254	0.5741	0.1342	+90	+11
95 Tauri	6.3	0.23	5.7	23 53.1	6 22.2	- 2 54.7	-0.3910	0.5744	0.1330	+21	-48
99 Tauri	6.0	0.29	5.6	23 46.7	12 19.8	+ 2 49.3	+0.4656	0.5768	0 1180	+73	- 1
k Tauri	6.0	0.29	5.9	24 53.0	12 26.7	+ 2 56.0	-0.6582	0.5768	0.1179	+ 5	-62
103 Tauri	6.0	+0.34	+ 5.7	+24 7.3	16 30.0	+ 6 50.0	+0.5834	0.5786	+0.1071	+84	+ 6
118 Tauri	5.7	0.43	5.7	25 3.8	11 1 0.7	- 8 59.0	+0.4266	0.5818	0.0845	+70	+ 0
125 Tauri	6.0	0.46	5.7	25 50.2	5 11.5	- 4 57.9	-0.0449	0.5820	0.0728	+40	-23
139 Tauri	5.3	0.53	5.5	25 56.4	12 29.5	+ 2 3.0	+0.3050	0.5838	+0.0523	+62	- 3
39 Geminorum	6.3	0.69	4.3	26 13.3	12 12 50.6	+ 1 27.3	+0.4406	0.5812	-0.0171	+72	+ 7
40 Geminorum	6.3	+0.70	+ 4.3	+26 3.6	13 6 6	+ 1 42.6	+0.6066	0.5812	-0.0180	+88	+16
47 Geminorum	6.0	0.72	4.1	27 2.0	17 55.0	+ 6 19.9	-0.5342	0.5795	0.0315	+12	-48
A Geminorum	5.7	0.74	3.6	25 15.5	22 53.0	+11 6.5	+1.1420	0.5777	0.0451	+90	+48
υ Geminorum	4.3	0.76	3.3	27 8.1	13 3 57.4	- 8 0.7	-1.0980	0.5748	0.0588	-27	-63
c Geminorum	6.0	0.77	3.1	26 2.4	7 22.1	- 4 43.6	-0.1620	0.5733	0.0678	+33	-29
ω¹ Cancri	6.0	+0.77	+ 2.5	+25 41.3	14 24.5	+ 2 3.1	-0.3287	0.5694	-0.0859	+24	-40

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0. Δα	Red'ns from 1892.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
ω^2 Cancri	6.3	+0.80	+2.5	+25 23.2	**13** 14 45.0	+ 2 22.8	-0.0389	0.5692	-0.0867	+40	-24
ψ^2 Cancri	5.7	0.80	2.2	25 50.0	18 26.4	+ 5 56.1	-0.8531	0.5670	0.0961	- 7	-64
λ Cancri	5.7	0.79	2.0	24 21.7	22 46.4	+10 6.6	+0.2733	0.5642	0.1063	+59	-10
υ^1 Cancri *mult.*	6.0	0.79	1.7	24 53.4	**14** 1 24.4	-11 21.0	-0.5763	0.5615	0.1125	+10	-57
υ^2 Cancri	5.8	0.79	1.7	24 30.2	2 15.5	-10 31.8	-0.2608	0.5616	0.1143	+28	-49
υ^3 Cancri	6.0	+0.79	+1.6	+24 26.7	3 31.1	- 9 18.9	-0.3463	0.5605	-0.1172	+23	-44
υ^4 Cancri	5.7	0.78	1.5	24 27.1	4 10.1	- 8 41.3	-0.4316	0.5597	0.1187	+18	-49
ξ Cancri	5.0	0.72	0.5	22 28.9	20 23.4	+ 6 58.2	-0.5331	0.5476	0.1524	+13	-58
79 Cancri	6.3	0.72	0.5	22 26.0	20 50.5	+ 7 24.4	-0.5491	0.5473	0.1533	+12	-60
B. A. C. 3138	6.3	0.72	0.4	21 43.7	22 21.0	+ 8 51.7	-0.0268	0.5460	0.1556	+41	-31
B. A. C. 3206	6.3	+0.70	+0.1	+20 15.3	**15** 3 31.1	-10 8.5	+0.7288	0.5421	-0.1656	+90	+ 8
η Leonis	3.3	0.57	-0.9	17 17.3	23 57.3	+ 9 38.3	+0.2223	0.5255	0.1968	+55	-23
42 Leonis	6.0	0.51	1.0	15 31.2	**16** 7 12.5	- 7 19.9	+0.6847	0.5198	0.2055	+90	0
i Leonis	5.7	0.48	1.2	14 41.5	12 28.2	- 2 13.7	+0.4900	0.5160	0.2114	+73	-12
k Leonis	5.7	0.44	1.6	14 45.9	19 48.4	+ 4 53.4	-1.1710	0.5116	0.2190	-26	-75
ω Virginis	5.9	+0.14	-0.9	+ 8 43.9	**17** 23 43.9	+ 8 1.3	-0.9725	0.4961	-0.2382	-10	-81
ν Virginis	4.0	0.12	1.2	7 8.1	**18** 3 49.3	+11 59.9	-0.1930	0.4950	0.2403	+33	-52
b Virginis	5.8	+0.04	1.3	+ 4 15.4	11 39.8	- 4 22.4	+1.0860	0.4919	0.2427	+90	+18
γ Virginis (*mean.*)	3.1	-0.18	0.9	- 0 51.5	**19** 11 13.6	- 5 26.5	+0.9743	0.4877	0.2460	+89	+10
k Virginis	5.9	0.29	0.6	3 13.7	21 23.6	+ 4 27.3	+1.1020	0.4875	0.2449	+87	+18
46 Virginis	6.1	-0.29	-0.6	- 2 47.1	21 55.5	+ 4 58.3	+0.4835	0.4875	-0.2449	+71	-18
48 Virginis	6.7	0.31	0.6	3 4.8	23 48.2	+ 6 48.0	+0.3506	0.4877	0.2445	+62	-25
65 Virginis	6.1	0.44	0.8	4 21.5	**20** 10 45.4	- 6 32.4	-0.8987	0.4897	0.2417	- 6	-90
66 Virginis	6.0	0.45	0.8	4 35.9	11 26.3	- 5 52.5	-0.7989	0.4898	0.2416	0	-90
l^2 Virginis	5.1	0.49	-0.5	5 41.8	15 36.6	- 1 49.0	-0.5849	0.4906	0.2401	+12	-80
m Virginis	5.4	-0.54	0.0	- 8 9.4	20 58.6	+ 3 24.3	+0.8527	0.4914	-0.2375	+82	+ 3
B. A. C. 4591	6.0	0.57	+0.6	9 9.9	**21** 0 4.5	+ 6 25.1	+1.2340	0.4925	0.2359	+81	+30
W. xiii, 825	6.8	0.62	-0.1	9 1.7	4 49.3	+11 2.1	-0.0313	0.4943	0.2335	+24	-61
96 Virginis	6.9	0.69	0.3	9 49.3	12 2.9	- 5 56.3	-0.8273	0.4972	0.2291	- 4	-90
κ Virginis	4.2	0.71	-0.4	9 46.1	14 9.6	- 3 53.0	-1.3680	0.4982	0.2276	-51	-90
λ Virginis	4.7	-0.77	+0.5	-12 52.3	17 28.6	- 0 39.7	+1.3010	0.4994	-0.2250	+77	+39
Uranus				13 2.0	18 29.5	+ 0 19.5	+1.2510	0.4994	0.2242	+77	+34
2 Libræ	6.5	0.79	-0.2	11 13.2	19 49.3	+ 1 37.1	-1.0420	0.5006	0.2232	-19	-90
5 Libræ	6.6	0.93	+0.3	15 0.2	**22** 7 41.8	-10 50.9	+0.5265	0.5074	0.2126	+67	-15
μ Libræ	5.7	0.95	-0.3	13 41.9	9 27.9	- 9 7.9	-1.2790	0.5091	0.2110	-42	-89
α^1 Libræ	6.3	-0.97	+0.3	-15 32.8	10 8.9	- 8 28.1	+0.6033	0.5095	-0.2103	+72	-10
α^2 Libræ	2.9	0.97	+0.3	15 35.5	10 14.9	- 8 22.2	+0.6325	0.5095	0.2103	+72	- 9
ν^1 Libræ	5.5	1.05	-0.1	15 50.2	18 19.5	- 0 32.0	-0.7596	0.5145	0.2012	- 4	-90
ν^2 Libræ	6.9	1.05	-0.1	16 3.8	18 25.2	- 0 26.5	-0.5319	0.5146	0.2010	+ 8	-77
28 Libræ	6.0	1.13	0.0	17 45.8	**23** 1 28.1	+ 6 23.6	-0.0619	0.5202	0.1926	+31	-46
B. A. C. 5109	6.2	-1.21	+0.1	-19 18.0	7 13.8	+11 58.6	+0.5235	0.5240	-0.1844	+62	-14
41 Libræ	5.9	1.23	-0.3	18 56.7	10 17.8	- 9 3.2	-0.4203	0.5272	0.1803	+11	-69
κ Libræ	5.1	1.25	0.3	19 19.6	11 46.2	- 7 37.6	-0.2695	0.5276	0.1777	+19	-58
λ Libræ	5.1	1.37	0.9	19 50.5	17 13.0	- 2 21.2	-0.6552	0.5323	0.1693	- 3	-90
ω^1 Scorpii	4.6	1.37	1.0	20 22.5	23 33.0	+ 3 46.4	-1.1150	0.5374	0.1587	-34	-90
ω^2 Scorpii	4.6	-1.38	-1.0	-20 34.5	23 49.3	+ 4 2.1	-0.9423	0.5378	-0.1581	-21	-90
ρ Ophiuchi *mult.*	5.0	1.49	0.9	23 11.8	**24** 8 8.0	-11 55.8	+0.6296	0.5446	0.1428	+63	- 8
18 Ophiuchi	6.7	1.61	1.7	24 26.9	18 54.1	- 1 32.0	+0.5428	0.5536	0.1209	+56	-12
22 Ophiuchi	6.7	1.61	2.2	23 20.0	21 9.8	+ 0 39.0	-0.9145	0.5560	0.1160	-24	-90
B. A. C. 5709	6.3	1.65	2.0	24 55.5	23 21.4	+ 2 45.9	+0.5346	0.5577	0.1112	+55	-13
26 Ophiuchi	6.1	-1.65	-2.1	-24 49.3	23 26.3	+ 2 50.6	+0.4138	0.5580	-0.1110	+47	-19
39 Ophiuchi *mult.*	5.5	1.70	3.0	24 10.1	**25** 7 7.8	+10 15.5	-1.0630	0.5635	0.0931	-37	-90
θ Ophiuchi	3.3	1.72	3.0	24 53.5	8 48.5	+11 52.5	-0.4487	0.5654	0.0889	- 1	-72
B. A. C. 6194	5.1	1.90	5.1	27 4.8	**26** 7 51.3	+10 3.1	+0.4871	0.5804	-0.0279	+45	-15
φ Sagittarii	3.7	1.94	6.4	27 6.1	18 52.6	- 3 21.4	+0.3702	0.5848	+0.0033	+35	-22
σ Sagittarii	2.3	-1.95	-7.0	-26 26.0	22 41.7	+ 0 18.7	-0.2902	0.5864	+0.0145	0	-61

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
JANUARY.											
τ Sagittarii	3.6	-1.98	- 7.3	-27 49.8	**27** 3 16.4	+ 4 42.5	+1.2530	0.5869	+0.0279	+62	+51
ψ Sagittarii	5.4	1.96	8.0	25 26.7	6 41.8	+ 7 59.8	-1.0960	0.5869	0.0378	-45	-90
B. A. C. 6666	5.8	1.96	8.4	27 12.4	12 17.4	-10 38.0	+0.9772	0.5892	0.0545	+63	+17
				NEW	*MOON.*						
τ^1 Aquarii *mult.*	5.8	-1.56	-12.5	-14 37.7	**30** 21 6.8	- 4 54.1	+1.1400	0.5585	+0.2412	+75	+23
τ^2 Aquarii	4.1	1.55	12.5	14 9.9	21 56.3	- 4 6.4	+0.8764	0.5581	0.2424	+76	+ 5
74 Aquarii	6.0	1.54	12.3	12 11.6	23 39.0	- 2 27.3	-0.6784	0.5572	0 2447	+ 3	-90
ψ^1 Aquarii	4.1	1.46	11.7	9 40.8	**31** 9 32.8	+ 7 5.7	-0.7138	0.5518	0.2555	+ 3	-90
ψ^2 Aquarii	4.2	1.45	11.6	9 46.5	10 27.8	+ 7 58.8	-0.3842	0.5514	0.2562	+20	-65
ψ^3 Aquarii	4.8	-1.45	-11.6	-10 12.3	10 55.8	+ 8 25.9	+0.1648	0.5512	+0.2566	+49	-34
FEBRUARY.											
B. A. C. 8274	7.0	-1.35	-10.5	- 6 59.1	**1** 0 16.8	- 2 40.6	+0.4508	0.5460	+0.2666	+68	-19
27 Piscium	5.1	1.31	9.8	4 9.4	4 54.5	+ 1 47.7	-1.1350	0.5453	0.2694	-22	-90
29 Piscium	5.0	1.30	9.6	3 37.8	6 20.7	+ 3 11.0	-1.2750	0.5448	0.2700	-34	-90
4 Ceti	6.0	1.28	9.3	3 9.1	9 3.3	+ 5 48.1	-1.0200	0.5438	0.2708	-13	-90
5 Ceti	6.0	1.28	9.2	3 3.1	9 16.2	+ 6 0.5	-1.0620	0.5437	0.2710	-16	-90
B. A. C. 5	5.7	-1.29	- 9.2	- 2 49.6	9 30.3	+ 6 14.2	-1.2240	0.5437	+0.2710	-29	-90
10 Ceti	6.2	1.22	8.3	0 39.0	17 45.1	- 9 47.6	-1.1570	0.5408	0.2726	-23	-90
14 Ceti	6.0	1.18	8.1	1 6.0	21 52.8	- 5 48.1	+0.4190	0.5407	0.2731	+67	-21
15 Ceti	6.8	1.17	8.0	- 1 5.9	23 3.7	- 4 39.6	+0.7428	0.5405	0.2730	+89	- 4
77 Piscium	5.9	1.04	5.7	+ 4 19.9	**2** 11 55.0	+ 7 46.2	-1.2060	0.5388	0.2704	-27	-86
96 Piscium	6.6	-0.99	- 4.3	+ 6 44.1	22 41.2	- 5 49.0	-0.7382	0.5400	+0.2654	+ 4	-83
μ Piscium	5.0	0.98	4.5	5 35.1	23 11.9	- 5 19.3	+0.5554	0.5400	0.2652	+77	-13
o Piscium	4.4	0.92	- 3.1	8 36.7	**3** 6 13.2	+ 1 27.9	-0.6505	0.5405	0.2600	+ 9	-80
o Arietis	6.0	0.65	+ 0.6	14 51.1	**4** 9 6.0	+ 3 26.2	-0.3458	0.5479	0.2303	+25	-56
σ Arietis	5.5	0.61	0.8	14 38.1	12 12.5	+ 6 26.3	+0.5857	0.5492	0.2260	+81	- 7
53 Arietis	6.3	-0.54	+ 2.3	+17 27.7	19 14.9	-10 45.9	-0.7447	0.5507	+0.2148	+ 3	-73
13 Tauri	5.7	0.35	3.4	19 21.2	**5** 10 27.0	+ 3 53.9	+0.3812	0.5582	0.1873	+66	-13
14 Tauri	6.3	0.34	3.5	19 19.5	11 4.7	+ 4 30.3	+0.5298	0.5582	0.1860	+77	- 5
B. A. C. 1143	6.0	0.34	3.9	20 35.3	11 21.4	+ 4 46.3	-0.7143	0.5582	0.1855	+ 4	-69
A^1 Tauri	4.7	0.23	5.0	21 47.2	19 59.2	-10 54.5	-0.4235	0.5624	0.1677	+20	-53
A^2 Tauri	6.3	-0.23	+ 4.9	+21 43.1	20 15.4	-10 38.9	-0.3086	0.5626	+0.1671	+26	-46
51 Tauri	6.0	0.14	4.5	21 18.9	**6** 1 47.5	- 5 19.0	+0.9982	0.5646	0.1546	+90	+26
56 Tauri	6.0	0.13	5.0	21 30.7	2 18.4	- 4 49.2	+0.8776	0.5658	0.1539	+90	+19
κ^1 Tauri	4.7	0.09	5.3	22 2.8	4 42.7	- 2 30.2	+0.6866	0.5665	0.1480	+90	+ 8
κ^2 Tauri	6.5	0.09	5.3	21 57.2	4 44.1	- 2 28.9	+0.7865	0.5665	0.1480	+90	+13
υ^1 Tauri	4.7	-0.09	+ 5.5	+22 34.1	5 5.9	- 2 7.9	+0.2049	0.5667	+0.1471	+55	-17
υ^2 Tauri	6.0	-0.09	5.5	22 45.1	5 30.8	- 1 43.9	+0.0758	0.5667	0.1463	+47	-24
τ Tauri	4.5	+0.01	5.7	22 44.9	11 45.5	+ 4 16.8	+0.9497	0.5697	0.1314	+90	+25
95 Tauri	6.3	0.01	6.1	23 53.1	12 8.7	+ 4 39.2	-0.1762	0.5698	0.1304	+33	-35
99 Tauri	6.0	0.10	6.0	23 46.7	18 11.3	+10 28.2	+0.6764	0.5714	0.1154	+90	+11
k Tauri	6.0	+0.10	+ 6.4	+24 53.0	18 18.9	+10 35.6	-0.4568	0.5714	+0.1154	+17	-50
103 Tauri	6.0	0.16	6.2	24 7.3	22 25.5	- 9 27.1	+0.7885	0.5725	0.1046	+90	+18
118 Tauri	5.7	0.29	6.4	25 3.8	**7** 7 4.8	- 1 7.5	+0.6166	0.5702	0.0817	+88	+10
125 Tauri	6.0	0.35	6.6	25 50.2	11 20.0	+ 2 58.0	+0.1218	0.5761	0.0682	+50	-14
139 Tauri	5.3	0.45	6.5	25 56.4	18 45.9	+10 6.8	+0.4693	0.5761	+0.0497	+74	+ 6
39 Geminorum	6.3	+0.75	+ 5.4	+26 13.3	**8** 19 34.8	+ 9 59.0	+0.5563	0.5738	-0.0194	+82	+13
40 Geminorum	6.3	0.75	5.4	26 3.6	19 51.2	+10 14.8	+0.7218	0.5736	0.0201	+90	+22
47 Geminorum	6.0	0.80	5.3	27 2.0	**9** 0 45.2	- 9 2.3	-0.4381	0.5734	0.0334	+18	-42
υ Geminorum	4.3	0.89	4.6	27 8.1	10 58.7	+ 0 48.2	-1.0300	0.5697	0.0607	-21	-63
c Geminorum	6.0	0.93	4.2	26 2.4	14 27.0	+ 4 8.9	-0.0905	0.5671	0.0694	+37	-26
ω^1 Cancri	6.0	+0.99	+ 3.5	+25 41.3	21 36.5	+11 2.7	-0.2774	0.5639	-0.0875	+27	-37

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0. Δα	Red'ns from 1892.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	″	° ′	d h m	h m				°	°
ω^2 Cancri	6.3	+0.99	+3.5	+25 23.2	**9** 21 57.5	+11 22.9	+0.0124	0.5637	-0.0881	+43	-22
ψ^1 Cancri	6.8	1.01	3.2	26 9.7	**10** 1 35.7	- 9 6.7	-1.1530	0.5620	0.0971	-32	-64
ψ^2 Cancri	5.7	1.02	3.2	25 50.0	1 42.4	- 9 0.2	-0.8147	0.5620	0.0975	- 5	-64
λ Cancri	5.7	1.03	2.6	24 21.4	6 6.6	- 4 45.5	+0.3084	0.5582	0.1095	+62	- 8
υ^1 Cancri *mult.*	6.0	1.04	2.4	24 53.4	8 46.9	- 2 10.9	-0.5536	0.5572	0.1139	+11	-56
υ^2 Cancri	5.8	+1.05	+2.4	+24 30.2	9 38.7	- 1 20.9	-0.2391	0.5567	-0.1158	+29	-38
υ^3 Cancri	6.0	1.05	2.2	24 26.7	10 55.5	- 0 6.8	-0.3268	0.5555	0.1186	+24	-43
υ^4 Cancri	5.7	1.10	2.2	27 27.1	11 35.0	+ 0 31.3	-0.4114	0.5555	0.1204	+20	-48
ξ Cancri	5.0	1.09	0.4	22 28.8	**11** 4 0.9	- 7 36.6	-0.5539	0.5448	0 1535	+12	-60
79 Cancri	6.3	1.09	0.4	22 25.9	4 24.7	- 7 13.8	-0.5628	0.5442	0.1549	+12	-61
B. A. C. 3138	6.3	+1.09	+0.2	+21 43.6	5 59.8	- 5 41.8	-0.0540	0.5424	-0.1576	+40	-32
B. A. C. 3206	6.3	1.09	-0.4	20 15.2	11 13.2	- 0 38.7	+0.6934	0.5389	0.1670	+90	+ 7
η Leonis	3.3	1.07	2.2	17 17.2	**12** 7 48.7	- 4 42.5	+0.1342	0.5247	0.1990	+50	-28
42 Leonis	6.0	1.05	2.8	15 31.1	15 6.1	+ 2 21.5	+0.5764	0.5200	0.2080	+81	- 7
i Leonis	5.7	1.03	3.2	14 41.4	20 23.0	+ 7 28.8	+0.3678	0.5164	0.2140	+65	-18
ω Virginis	5.9	+0.85	-5.1	+ 8 43.8	**14** 7 40.5	- 6 14.3	-1.1840	0.4981	-0.2412	-25	-81
ν Virginis	4.0	0.83	5.1	7 8.0	11 45.4	- 2 16.2	-0.4117	0.4960	0.2428	+21	-65
b Virginis	5.8	0.76	5.2	+ 4 15.3	19 35.3	+ 5 20.9	+0.8549	0.4939	0.2456	+90	+ 3
γ Virginis	3.1	0.58	5.4	- 0 51.6	**15** 19 6.4	+ 4 14.0	+0.7031	0.4883	0.2478	+89	- 6
38 Virginis	6.2	0.52	5.4	2 58.1	**16** 1 36.6	+10 33.8	+1.4250	0.4887	0.2476	+87	+60
k Virginis	5.9	+0.50	-5.3	- 3 13.8	5 15.7	- 9 52.8	+0.8134	0.4887	-0.2468	+87	0
46 Virginis	6.1	0.50	5.4	2 47.3	5 48.0	- 9 21.4	+0.1922	0.4887	0.2468	+53	-33
48 Virginis	6.7	0.48	5.5	3 5.0	7 40.3	- 7 32.1	+0.0572	0.4886	0.2462	+46	-40
θ Virginis	4.6	0.46	5.2	4 57.9	11 4.7	- 4 13.2	+1.3050	0.4888	0.2456	+85	+37
65 Virginis	6.1	0.40	5.6	4 21.6	18 37.9	+ 3 7.9	-1.2110	0.4898	0.2430	-28	-90
66 Virginis	6.0	+0.39	-5.5	- 4 36.0	19 18.8	+ 3 47.7	-1.1090	0.4899	-0.2428	-20	-90
l^2 Virginis	5.1	0.36	5.4	5 41.9	23 29.6	+ 7 51.7	-0.9022	0.4904	0.2410	- 6	-90
m Virginis	5.4	0.30	5.0	8 9.5	**17** 4 52.3	-10 54.2	+0.5379	0.4918	0.2385	+73	-15
B. A. C. 4591	6.0	0.22	5.1	9 10.0	7 58.7	- 7 52.9	+0.9168	0.4922	0.2368	+81	+ 6
W. xiii, 825	6.8	0.22	5.1	9 1.8	12 44.5	- 3 14.9	-0.3568	0.4939	0.2342	+22	-63
96 Virginis	6.9	+0.17	-5.1	- 9 49.4	20 0.3	+ 3 48.9	-1.1570	0.4958	-0.2291	-26	-90
λ Virginis	4.7	0.11	4.4	12 52.4	**18** 1 27.8	+ 9 7.3	+0.9797	0.4981	0.2250	+77	+11
URANUS				13 3.7	2 43.6	+10 20.9	+0.9034	0.4985	0.2244	+77	+ 7
2 Libræ	6.5	+0.09	5.0	11 13.3	3 49.5	+11 25.1	-1.3750	0.4985	0.2226	-54	-90
5^1 Libræ	6.6	-0.04	4.3	15 0.3	15 48.0	- 0 56.9	+0.1987	0.5049	0.2116	+48	-32
a^1 Libræ	6.3	-0.06	-4.3	-15 32.9	18 16.5	+ 1 27.3	+0.2775	0.5066	-0.2092	+52	-28
a^2 Libræ	2.9	0.06	4.3	15 35.6	18 22.7	+ 1 33.3	+0.3052	0.5066	0.2091	+53	-27
ν^1 Libræ	5.5	0.14	4.4	15 50.3	**19** 2 32.5	+ 9 28.8	-1.0940	0.5112	0.1999	-26	-90
ν^2 Libræ	6.9	0.14	4.4	16 3.9	2 38.3	+ 9 34.4	-0.8624	0.5115	0.1996	-16	-90
28 Libræ	6.0	0.22	4.1	17 45.9	9 46.6	- 7 30.1	-0.3858	0.5151	0.1905	+14	-66
B. A. C. 5109	6.2	-0.28	-3.9	-19 18.1	15 36.8	- 1 50.6	+0.2099	0.5194	-0.1825	+44	-31
41 Libræ	5.9	0.32	4.1	18 56.8	18 43.9	+ 1 10.8	-0.7410	0.5220	0.1781	- 6	-90
κ Libræ	5.1	0.33	4.1	19 19.7	20 13.6	+ 2 37.7	-0.5865	0.5225	0.1756	+ 2	-83
λ Libræ	5.1	0.38	4.1	19 50.6	**20** 1 45.5	+ 7 59.1	-0.9709	0.5265	0.1671	-22	-90
δ Scorpionis	2.6	0.42	3.5	22 18.8	5 4.5	+11 11.8	+1.1740	0.5290	0.1615	+68	+30
ω^2 Scorpionis	4.6	-0.45	-4.2	-20 34.6	8 28.5	- 9 30.8	-1.2540	0.5322	-0.1561	-48	-90
δ Ophiuchi *mult.*	5.0	0.56	3.7	23 11.9	16 56.2	- 1 19.7	+0.3375	0.5385	0.1404	+46	-24
18 Ophiuchi	6.7	0.68	3.8	24 27.0	**21** 3 54.8	+ 9 16.6	+0.2672	0.5465	0.1183	+39	-28
22 Ophiuchi	6.7	0.69	4.3	23 20.1	6 13.2	+11 30.3	-1.2020	0.5488	0.1136	-47	-90
B. A. C. 5709	6.3	0.72	3.9	24 55.6	8 27.4	-10 20.1	+0.2631	0.5507	0.1090	+38	-28
26 Ophiuchi	6.1	-0.73	-3.9	-24 49.4	8 32.5	-10 15.2	+0.1417	0.5507	-0.1081	+32	-35
A Ophiuchi	4.7	0.80	3.8	26 26.7	15 12.2	- 3 49.6	+1.2090	0.5560	0.0932	+64	+39
38 Ophiuchi	6.7	0.80	3.8	26 30.6	16 10.6	- 2 53.3	+1.1900	0.5569	0.0911	+63	+36
θ Ophiuchi	3.3	0.83	4.5	24 53.5	18 5.9	- 1 2.2	-0.7148	0.5582	0.0847	-15	-90
B. A. C. 6194	5.1	1.06	5.2	27 4.8	**22** 17 36.1	- 2 24.0	+0.2721	0.5733	-0.0628	+31	-27
ϕ Tauri	3.7	-1.16	-5.9	-27 6.1	**23** 4 46.9	+ 8 23.7	+0.1742	0.5778	+0.0051	+24	-30

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0. Δα	Red'ns from 1892.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
σ Sagittarii	2.3	-1.17	- 6.4	-26 25.9	23 8 42.7	-11 52.2	-0.4852	0.5797	+0.0163	-10	-76
τ Sagittarii	3.6	1.23	6.3	27 49.7	13 21.8	- 7 24.0	+1.0780	0.5824	0.0299	+62	+26
B. A. C. 6666	5.8	1.30	7.0	27 12.3	22 30.6	+ 1 23.3	+0.8189	0.5840	0.0562	+63	+ 5
h² Sagittarii	4.6	1.29	7.7	25 7.3	24 1 15.9	+ 4 2.2	-1.1700	0.5844	0.0642	-48	-90
ω Sagittarii	5.1	1.37	7.8	26 35.2	8 49.2	+11 17.6	+0.9074	0.5848	0.0862	+63	+11
A Sagittarii	5.3	-1.38	- 7.9	-26 29.4	10 4.1	-11 30.4	+0.9193	0.5841	+0.0894	+64	+12
χ Capricorni	5.4	1.46	10.1	21 37.7	13 57.2	- 8 42.8	-0.4570	0.5800	0.1645	+ 6	-72
φ Capricorni	5.5	1.47	10.3	21 6.1	16 49.3	- 5 57.3	-0.5050	0.5788	0.1717	+ 4	-76
33 Capricorni	5.7	1.47	10.4	21 18.7	20 17.1	- 2 37.4	+0.3166	0.5776	0.1794	+46	-25
35 Capricorni	6.2	1.47	10.5	21 40.0	21 32.5	- 1 24.9	+0.8962	0.5765	0.1826	+68	+ 8
37 Capricorni	6.0	-1.48	10.6	20 34.0	25 0 39.9	+ 1 35.3	+0.3756	0.5751	+0.1887	+52	-22
ε Capricorni	4.7	1.48	10.6	19 57.1	26 1 35.1	+ 2 28.4	-0.0634	0.5751	0.1920	+28	-46
				NEW	*MOON.*						
14 Ceti	6.0	1.35	8.5	1 6.0	29 6 45.2	+ 4 52.2	+0.5977	0.5492	0.2797	+81	-12
15 Ceti	6.8	-1.35	- 8.4	- 1 5.9	7 53.8	+ 5 58.4	+0.9179	0.5490	+0.2798	+88	+ 6
77 Piscium	5.9	-1.31	- 6.9	+ 4 19.9	20 19.9	- 6 1.1	-0.9683	0.5483	+0.2771	- 9	-86

MARCH.

Name.	Mag.	Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
96 Piscium	6.6	-1.27	- 5.4	+ 6 44.1	1 6 43.6	+ 4 1.1	-0.4918	0.5493	+0.2720	+18	-71
μ Piscium	5.0	1.25	5.5	5 35.1	7 13.5	+ 4 30.0	+0.7821	0.5494	0.2715	+90	- 1
o Piscium	4.4	1.22	4.4	8 36.7	14 0.3	+11 2.6	-0.3915	0.5499	0.2662	+23	-63
29 Arietis	6.3	1.09	1.1	14 33.3	2 10 55.9	+ 7 14.5	-0.9750	0.5546	0.2424	-11	-76
o Arietis	6.0	-1.04	- 0.5	+14 51.1	16 0.3	-11 51.9	-0.0635	0.5564	+0.2348	+39	-40
σ Arietis	5.5	1.00	- 0.4	14 38.1	19 1.1	- 8 57.5	+0.8511	0.5572	0.2300	+90	+ 8
53 Arietis	6.3	0.95	+ 1.1	17 27.6	3 1 51.1	- 2 22.2	-0.4498	0.5598	0.2185	+19	-60
13 Tauri	5.7	0.78	2.8	19 21.2	16 39.2	+11 53.5	+0.6627	0.5648	0.1897	+90	+ 2
14 Tauri	6.3	0.77	2.9	19 19.5	17 16.1	-11 30.9	+0.8083	0.5650	0.1884	+90	+11
B. A. C. 1143	6.0	-0.78	+ 3.3	+20 35.3	17 32.3	-11 15.3	-0.4228	0.5650	+0.1878	+20	-55
A¹ Tauri	4.7	0.67	4.2	21 47.2	4 1 58.6	- 3 7.8	-0.1343	0.5682	0.1692	+35	-37
A² Tauri	6.3	0.67	4.2	21 43.1	2 14.4	- 2 52.6	-0.0205	0.5683	0.1686	+42	-31
56 Tauri	6.0	0.58	4.5	21 30.7	8 10.2	+ 2 50.0	+1.1530	0.5701	0.1548	+90	+38
62 Tauri	6.0	0.56	5.4	24 3.0	9 56.2	+ 4 31.9	-1.1800	0.5702	0.1505	-32	-66
χ¹ Tauri	4.7	-0.55	+ 4.7	+22 2.8	10 31.9	+ 5 6.4	+0.9627	0.5709	+0.1490	+90	+24
χ² Tauri	6.3	0.55	4.7	21 57.2	10 33.4	+ 5 7.8	+1.0620	0.5709	0.1490	+90	+32
υ¹ Tauri	4.7	0.54	5.0	22 34.1	10 54.7	+ 5 28.3	+0.4866	0.5710	0.1482	+75	- 3
υ² Tauri	6.0	0.53	5.1	22 45.1	11 19.1	+ 5 51.8	+0.3586	0.5710	0.1475	+65	- 9
τ Tauri	4.5	0.44	5.4	22 44.9	17 27.7	+11 46.4	+1.2200	0.5724	0.1317	+88	+48
95 Tauri	6.3	-0.45	+ 5.8	+23 53.1	17 50.6	-11 51.5	+0.1028	0.5727	+0.1308	+49	-21
99 Tauri	6.0	0.35	6.0	23 46.7	23 48.2	- 6 7.5	+0.9473	0.5741	0.1152	+90	+27
k Tauri	6.0	0.35	6.4	24 53.0	23 55.3	- 6 0.6	-0.1787	0.5741	0.1150	+33	-34
103 Tauri	6.0	0.29	6.2	24 7.3	5 3 59.4	- 2 6.0	+1.0540	0.5748	0.1042	+90	+36
118 Tauri	5.7	0.14	6.8	25 3.8	12 33.8	+ 6 8.9	+0.8776	0.5759	0.0810	+90	+26
125 Tauri	6.0	-0.08	+ 7.1	+25 50.2	16 47.1	+10 12.3	+0.3921	0.5759	+0.0692	+68	0
136 Tauri	5.3	+0.02	7.8	27 35.2	22 15.4	- 8 31.9	-1.0960	0.5761	0.0541	-27	-62
139 Tauri	5.3	0.04	7.2	25 56.4	6 0 11.0	- 6 40.7	+0.7230	0.5762	0.0486	+90	+20
49 Aurigæ	5.7	0.29	7.7	28 6.3	15 16.3	+ 7 50.0	-1.1370	0.5742	+0.0063	-32	-62
39 Geminorum	6.3	0.44	6.9	26 13.3	7 1 0.9	- 6 47.6	+0.7812	0.5712	-0.0206	+90	+25
40 Geminorum	6.3	+0.44	+ 6.7	+26 3.6	1 17.3	- 6 31.8	+0.9473	0.5716	-0.0214	+90	+36
47 Geminorum	6.0	0.52	6.8	27 2.0	6 12.7	- 1 47.5	-0.2225	0.5697	0.0346	+30	-29
υ Geminorum	4.3	0.68	6.3	27 8.1	16 30.7	+ 8 7.6	-0.8296	0.5650	0.0618	- 6	-63
c Geminorum	6.0	0.71	5.7	26 2.4	20 0.7	+11 29.9	+0.1050	0.5633	0.0706	+49	-15
φ Geminorum	5.0	0.75	5.7	27 2.7	8 0 0.6	- 8 38.9	-1.2750	0.5614	0.0807	-53	-63
ω¹ Cancri	6.0	+0.80	+ 5.1	+25 41.3	3 14.4	- 5 32.0	-0.0944	0.5593	-0.0883	+40	-27

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'n from 1892.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	° ′	d h m	h m				°	°
ω^2 Cancri	6.3	+0.81	+5.0	+25 23.2	8 3 35.7	− 5 11.5	+0.1945	0.5590	−0.0894	+54	−13
ψ^1 Cancri	6.8	0.86	4.9	26 9.7	7 16.2	− 1 38.9	−0.9813	0.5569	0.0982	−16	−64
ψ^2 Cancri	5.7	0.86	4.8	25 59.0	7 23.0	− 1 32.3	−0.6416	0.5567	0.0985	+ 6	−61
λ Cancri	5.7	0.88	4.1	24 21.7	11 50.1	+ 2 45.4	+0.4779	0.5539	0.1086	+75	0
υ^1 Cancri *mult*	6.0	0.91	4.0	24 53.4	14 32.3	+ 5 21.9	−0.3926	0.5525	0.1149	+21	−46
υ^2 Cancri	5.8	+0.93	+3.8	+24 30.2	15 24.7	+ 6 12.5	−0.0771	0.5520	−0.1169	+38	−29
υ^3 Cancri	6.0	0.93	3.7	24 26.7	16 42.5	+ 7 27.6	−0.1669	0.5512	0.1198	+33	−34
υ^4 Cancri	5.7	0.94	3.7	24 27.2	17 22.4	+ 8 6.1	−0.2584	0.5504	0.1212	+28	−39
ξ Cancri	5.0	1.07	1.8	22 28.8	9 10 0.7	+ 0 10.6	−0.4315	0.5394	0.1547	+19	−53
79 Cancri	6.3	1.07	1.7	22 25.9	10 28.5	+ 0 37.5	−0.4486	0.5389	0.1557	+18	−54
B. A. C. 3138	6.3	+1.08	+1.5	+21 43.5	12 1.3	+ 2 7.2	+0.0723	0.5379	−0.1585	+47	−26
B. A. C. 3206	6.3	1.10	+0.7	20 15.2	17 18.6	+ 7 14.1	+0.8074	0.5344	0.1678	+90	+12
η Leonis	3.3	1.19	−1.7	17 17.2	10 14 9.8	+ 3 26.0	+0.1949	0.5204	0.1997	+54	−25
42 Leonis	6.0	1.19	2.6	+15 31.1	21 32.2	+10 35.0	+0.6240	0.5156	0.2089	+85	− 4
i Leonis	5.7	1.20	3.1	14 41.4	11 2 52.5	− 8 14.1	+0.4021	0.5125	0.2150	+67	−16
ω Virginis	5.9	+1.18	−6.3	+ 8 43.8	12 14 27.5	+ 2 20.3	−1.2430	0.4963	−0.2428	−30	−81
ν Virginis	4.0	1.16	6.6	7 8.0	18 33.8	+ 6 19.7	−0.4798	0.4948	0.2445	+18	−70
b Virginis	5.8	1.13	7.1	+ 4 15.3	13 2 25.7	−10 1.1	+0.7674	0.4925	0.2474	+90	− 2
γ^1 Virginis	3.1	1.07	8.1	− 0 51.6	14 2 0.5	−11 4.3	+0.5569	0.4891	0.2503	+77	−14
k Virginis	5.9	1.01	8.4	3 13.8	12 10.3	− 1 10.7	+0.6518	0.4891	0.2492	+84	− 9
46 Virginis	6.1	+1.01	−8.4	− 2 47.3	12 42.4	− 0 39.4	+0.0259	0.4891	−0.2491	+44	−42
48 Virginis	6.7	1.00	8.4	3 5.0	14 34.9	+ 1 10.1	−0.1130	0.4894	0.2488	+37	−49
θ Virginis	4.6	0.98	8.5	4 57.8	17 59.5	+ 4 29.1	+1.1300	0.4896	0.2478	+85	+21
66 Virginis	6.0	0.96	8.7	4 36.1	15 2 13.7	−11 29.8	−1.3020	0.4906	0.2451	−36	−90
l^2 Virginis	5.1	0.94	8.6	5 42.0	6 24.2	− 7 26.1	−1.1000	0.4911	0.2434	−20	−90
m Virginis	5.4	+0.90	−8.5	− 8 9.6	11 47.0	− 2 11.9	+0.3334	0.4918	−0.2406	+60	−26
B. A. C. 4591	6.0	0.88	8.5	9 10.1	14 53.6	+ 0 49.6	+0.7057	0.4930	0.2390	+81	− 6
W. xiii, 825	6.8	0.87	8.5	9 1.9	19 39.3	+ 5 27.5	−0.5749	0.4964	0.2359	+11	−79
λ Virginis	4.7	0.79	8.4	12 52.5	16 8 23.2	− 6 9.5	+0.7398	0.4983	0.2264	+77	− 4
URANUS				12 52.6	8 31.2	− 6 1.9	+0.7176	0.4994	0.2272	+77	− 5
5 Libræ	6.6	+0.70	−7.9	−15 0.4	22 45.4	+ 7 48.1	−0.0517	0.5047	−0.2128	+34	−46
α^1 Libræ	6.3	0.69	7.9	15 33.0	17 1 14.4	+10 12.8	+0.0240	0.5064	0.2102	+38	−42
α^2 Libræ	2.9	0.69	7.9	15 35.7	1 20.4	+10 18.6	+0.0498	0.5064	0.2102	+39	−40
ν^1 Libræ	5.5	0.63	8.0	15 50.4	9 32.5	− 5 43.6	−1.3580	0.5104	0.2004	−58	−71
ν^2 Libræ	6.9	0.63	8.0	16 4.0	9 38.3	− 5 37.5	−1.1260	0.5105	0.2004	−28	−90
28 Libræ	6.0	+0.58	−7.6	−17 46.0	16 49.1	+ 1 20.0	−0.6551	0.5148	−0.1910	0	−89
B. A. C. 5109	6.2	0.54	7.2	19 18.1	22 41.9	+ 7 2.1	−0.0570	0.5183	0.1828	+30	−46
41 Libræ	5.9	0.52	7.3	18 56.8	18 1 50.4	+10 4.9	−1.0170	0.5200	0.1780	−23	−90
κ Libræ	5.1	0.51	7.2	19 19.7	3 20.8	+11 32.5	−0.8624	0.5212	0.1758	−14	−90
λ Libræ	5.1	0.47	7.1	19 50.6	8 55.9	− 7 2.9	−1.2560	0.5267	0.1678	−46	−85
δ Scorpii	2.6	+0.44	−6.5	−22 18.8	12 17.0	− 3 48.0	+0.9147	0.5286	−0.1620	+68	+ 9
19 Scorpii	5.1	0.36	6.0	23 54.5	21 57.0	+ 5 33.4	+1.1790	0.5333	0.1441	+66	+32
ρ Ophiuchi *mult.*	5.0	0.34	6.2	23 11.9	19 0 17.5	+ 7 49.2	+0.0693	0.5350	0.1398	+31	−39
25 Scorpii	6.5	0.25	5.6	25 19.9	10 5.9	− 6 41.9	+1.1180	0.5416	0.1201	+65	+27
18 Ophiuchi	6.7	0.24	5.9	24 27.0	11 26.1	− 5 24.4	0.0000	0.5426	0.1174	+25	−43
B. A. C. 5709	6.3	+0.20	−5.7	−24 55.6	16 3.5	− 0 56.4	−0.0036	0.5458	−0.1077	+24	−42
26 Ophiuchi	6.1	0.20	5.8	24 49.4	16 8.7	− 0 51.4	−0.1249	0.5458	0.1074	+18	−50
A Ophiuchi	4.7	0.13	5.3	26 26.7	22 56.0	+ 5 41.8	+0.9548	0.5501	0.0924	+64	+14
38 Ophiuchi	6.7	0.12	5.3	26 30.6	23 55.5	+ 6 39.3	+0.9344	0.5507	0.0900	+63	+13
θ Ophiuchi	3.3	+0.10	5.8	24 53.5	20 1 53.2	+ 8 32.8	−0.9874	0.5518	0.0854	−32	−90
B. A. C. 6194	5.1	−0.15	−5.2	−27 4.8	21 1 55.9	+ 7 43.6	+0.0232	0.5626	−0.0253	+18	−42
ϕ Sagittarii	3.7	0.27	5.3	27 6.1	13 27.0	− 5 11.0	−0.0618	0.5693	+0.0060	+11	−46
σ Sagittarii	2.3	0.31	5.6	26 25.9	17 26.5	− 1 20.6	−0.7259	0.5707	0.0169	−23	−90
τ Sagittarii	3.6	0.36	5.2	27 49.7	22 13.4	+ 3 15.5	+0.8604	0.5718	0.0300	+62	+ 8
B. A. C. 6666	5.8	0.46	5.4	27 12.3	22 7 37.7	−11 41.6	+0.6075	0.5740	0.0564	+55	− 7
ω Sagittarii	5.1	−0.56	−5.7	−26 35.1	18 14.0	− 1 29.6	+0.7125	0.5745	+0.0858	+63	− 2

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	° ′	d h m	h m				°	°
A Sagittarii	5.3	-0.57	-5.7	-26 29.3	22 19 31.0	- 0 15.6	+0.7238	0.5746	+0.0894	+64	- 2
χ Capricorni	5.4	0.84	7.2	21 37.7	24 0 9.0	+ 3 17.1	-0.6215	0.5711	0.1641	- 3	-87
27 Capricorni	6.5	0.84	7.3	20 59.5	0 33.8	+ 3 41.0	-1.2010	0.5712	0 1650	-42	-90
φ Capricorni	5.5	0.87	7.3	21 6.1	3 5.2	+ 6 6.7	-0.6642	0.5705	0.1708	- 5	-90
33 Capricorni	5.7	0.90	7.4	21 18.7	6 37.9	+ 9 31.5	+0.1706	0.5697	0.1794	+40	-33
35 Capricorni	6.2	-0.91	-7.3	-21 40.0	7 54.9	+10 45.6	+0.7617	0.5692	+0.1821	+65	- 1
37 Capricorni	6.0	0.93	7.5	20 34.0	11 6.5	-10 9.9	+0.2407	0.5684	0.1892	+44	-30
ε Capricorni	4.7	0.94	7.6	19 57.1	12 2.7	- 9 15.8	-0.2020	0.5680	0.1914	+24	-55
κ Capricorni	5.0	0.95	7.7	19 21.7	14 23.0	- 7 0.7	-0.3449	0.5676	0.1966	+15	-63
B. A. C. 7550	6.3	0.96	7.6	20 6.9	14 37.2	- 6 47.1	+0.4612	0.5678	0.1972	+58	-18
29 Aquarii *mult.*	6.5	-1.01	-8.1	-17 29.2	22 45.1	+ 1 2.8	-0.5137	0.5648	+0.2135	+ 9	-76
56 Aquarii	6.3	1.08	8.4	15 8.3	25 10 39.3	-11 29.0	-0.1862	0.5614	0.2352	+27	-54
τ^1 Aquarii *mult.*	5.8	1.12	8.5	14 37.6	18 10.3	- 4 14.2	+1.1140	0.5590	0.2468	+75	+21
τ^2 Aquarii	4.1	1.13	8.5	14 9.8	18 59.4	- 3 26.9	+0.8555	0.5590	0.2481	+76	+ 3
74 Aquarii	6.0	1.14	8.6	12 11.5	20 41.0	- 1 48.9	-0.6795	0.5586	0.2505	+ 4	-90
ψ^1 Aquarii	4.1	-1.18	-8.7	- 9 40.7	26 6 26.5	+ 7 35.8	-0.6582	0.5560	+0.2626	+ 8	-87
ψ^2 Aquarii	4.2	1.19	8.7	9 46.4	7 20.4	+ 8 27.7	-0.3275	0.5562	0.2636	+24	-62
ψ^3 Aquarii	4.8	1.19	8.7	-10 12.2	7 48.0	+ 8 54.4	+0.2189	0.5560	0.2642	+52	-32
				NEW	*MOON.*						
σ Piscium	4.4	-1.35	-4.8	+ 8 36.7	29 0 31.1	- 0 56.3	-0.2658	0.5576	+0.2719	+29	-56
29 Arietis	6.3	1.31	2.1	14 33.3	20 31.0	- 5 22.4	-0.8058	0.5644	0.2482	0	-75
ο Arietis	6.0	1.29	1.6	14 51.1	30 1 25.3	- 0 38.9	+0.0983	0.5659	0.2405	+48	-32
σ Arietis	5.5	1.27	-1.4	14 38.1	4 19.9	+ 2 9.3	+1.0060	0.5672	0.2357	+90	+18
53 Arietis	6.3	1.25	0.0	17 27.6	10 55.8	+ 8 30.5	-0.2690	0.5699	0.2241	+29	-49
54 Arietis	6.3	-1.25	+0.2	+18 22.7	11 17.7	+ 8 51.5	-1.0980	0.5701	+0.2232	-21	-72
13 Tauri	5.7	1.14	1.7	19 21.1	31 1 12.0	- 1 45.8	+0.8443	0.5751	0.1944	+90	+12
14 Tauri	6.3	1.13	1.8	19 19.4	1 47.6	- 1 11.5	+0.9874	0.5755	0.1929	+90	+22
B. A. C. 1143	6.0	1.14	2.1	20 35.2	2 3.3	- 0 56.4	-0.2228	0.5758	0.1924	+31	-44
B. A. C. 1189	6.0	1.13	2.6	21 55.0	4 14.3	+ 1 9.5	-1.1370	0.5765	0.1873	-26	-68
32 Tauri	6.0	-1.11	+2.9	+22 10.0	7 2.1	+ 3 50.9	-0.8754	0.5768	+0.1808	- 8	-68
A^1 Tauri	4.7	1.07	3.2	21 47.2	10 11.2	+ 6 52.7	+0.0635	0.5786	0.1733	+47	-27
A^2 Tauri	6.3	1.07	3.2	21 43.1	10 26.4	+ 7 7.3	+0.1754	0.5788	0.1726	+53	-21
62 Tauri	6.0	1.00	4.4	24 3.0	17 51.7	- 9 44.8	-0.9548	0.5807	0.1539	-12	-66
χ Tauri	4.7	0.97	3.9	22 2.8	18 26.3	- 9 11.5	+1.1490	0.5809	0.1524	+90	+38
υ^1 Tauri	4.7	-0.97	+4.1	+22 34.1	18 48.2	- 8 50.4	+0.6798	0.5812	+0.1512	+90	+ 8
υ^2 Tauri	6.0	-0.96	+4.2	+22 45.1	19 11.7	- 8 27.8	+0.5562	0.5816	+0.1505	+81	+ 1

APRIL.

Name.	Mag.	$\Delta\alpha$	$\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
95 Tauri	6.3	-0.88	+5.0	+23 53.1	1 1 29.6	- 2 24.8	+0.3076	0.5841	+0.1339	+62	-10
99 Tauri	6.0	0.81	5.4	23 46.7	7 15.1	+ 3 7.1	+1.1410	0.5838	0.1179	+90	+42
k Tauri	6.0	0.82	5.7	24 53.0	7 21.9	+ 3 13.7	+0.0322	0.5838	0.1177	+45	-23
103 Tauri	6.0	0.75	5.8	24 7.3	11 18.0	+ 7 0.3	+1.2470	0.5843	0.1064	+81	+54
118 Tauri	5.7	0.63	6.5	25 3.8	19 36.0	- 9 1.3	+1.0760	0.5348	0.0823	+90	+39
125 Tauri	6.0	-0.57	+6.9	+25 50.2	23 41.7	- 5 5.3	+0.5987	0.5843	+0.0703	+87	+11
136 Tauri	5.3	0.49	7.7	27 35.2	2 5 0.4	+ 0 0.7	-0.8670	0.5838	0.0549	- 8	-62
139 Tauri	5.3	0.46	7.2	25 56.4	6 52.8	+ 1 48.6	+0.9281	0.5837	0.0493	+90	+32
49 Aurigæ	5.7	0.20	8.3	28 6.3	21 35.3	- 8 3.6	-0.9109	0.5798	+0.0059	-11	-62
25 Geminorum	6.5	0.15	8.3	28 17.8	3 0 2.7	- 5 41.8	-1.1050	0.5788	-0.0010	-28	-62
39 Geminorum	6.3	-0.04	+7.6	+26 13.3	7 7.5	+ 1 6.7	+0.9847	0.5761	-0.0211	+90	+38
40 Geminorum	6.3	-0.03	7.5	26 3.6	7 23.6	+ 1 22.0	+1.1480	0.5757	0.0222	+90	+50
47 Geminorum	6.0	+0.05	7.8	27 2.0	12 13.7	+ 6 1.0	-0.0105	0.5737	0.0354	+43	-18
59 Geminorum	6.9	0.14	8.0	27 50.8	17 37.4	+11 12.4	-1.1000	0.5703	0.0503	-27	-62
υ Geminorum	4.3	0.21	7.6	27 8.1	22 21.8	- 8 13.9	-0.6203	0.5675	0.0627	+ 8	-56
c Geminorum	6.0	+0.27	+7.1	+26 2.4	4 1 49.0	- 4 54.3	+0.3073	0.5653	-0.0719	+62	- 4

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	° ′	d h m	h m				°	°
ϕ Geminorum	5.0	+0.34	+ 7.3	+27 2.7	4 5 46.0	- 1 6.0	-1.0640	0.5628	-0.0818	-23	-63
ω^1 Cancri	6.0	0.38	6.7	25 41.3	8 57.8	+ 1 58.8	+0.1046	0.5608	0.0896	+49	-17
ω^2 Cancri	6.3	0.38	6.6	25 23.2	9 18.7	+ 2 18.9	+0.3938	0.5604	0.0905	+68	- 2
ψ^1 Cancri	6.8	0.45	6.6	26 9.7	11 57.2	+ 5 49.5	-0.7784	0.5578	0.0993	- 2	-64
ψ^3 Cancri	5.7	0.45	6.5	25 50.0	13 3.9	+ 5 56.0	-0.4387	0.5577	0.0995	+18	-48
λ Cancri	5.7	+0.49	+ 5.7	+24 21.7	17 28.8	+10 11.4	+0.6699	0.5546	-0.1100	+90	+10
υ^1 Cancri *mult.*	6.0	0.52	5.7	24 53.4	20 9.8	-11 13.2	-0.1960	0.5526	0.1160	+33	-35
υ^2 Cancri	5.8	0.52	5.6	24 30.2	21 2.0	-10 22.9	+0.1160	0.5518	0.1178	+50	-20
υ^3 Cancri	6.0	0.54	5.5	24 26.7	22 19.3	- 9 8.3	+0.0232	0.5508	0.1207	+44	-24
υ^4 Cancri	5.7	0.55	5.5	27 27.1	22 59.0	- 8 30.0	-0.0625	0.5504	0.1220	+40	-29
ξ Cancri	5.0	+0.76	+ 3.7	+22 28.9	5 15 34.1	+ 7 31.4	-0.2537	0.5375	-0.1556	+29	-43
79 Cancri	6.3	0.76	3.7	22 26.0	16 2.0	+ 7 58.3	-0.2757	0.5375	0.1564	+28	-44
B. A. C. 3138	6.3	0.78	3.3	21 43.7	17 34.7	+ 9 27.9	+0.2453	0.5362	0.1593	+58	-18
B. A. C. 3206	6.3	0.81	+ 2.5	20 15.2	22 52.1	- 9 25.0	+0.9738	0.5326	0.1686	+90	+22
η Leonis	3.3	1.00	0.0	17 17.2	6 19 47.2	+10 50.8	+0.3405	0.5175	0.2000	+63	-18
42 Leonis	6.0	+1.05	- 1.1	+15 31.1	7 3 12.1	- 5 57.7	+0.7595	0.5126	-0.2092	+90	+ 3
i Leonis	5.7	1.07	1.7	14 41.4	8 34.3	- 0 45.0	+0.5284	0.5094	0.2153	+76	-10
k Leonis	5.7	1.12	2.2	14 45.8	16 3.2	+ 6 30.8	-1.1910	0.5053	0.2227	-27	-75
ω Virginis	5.9	1.24	5.5	8 43.8	8 20 24.4	+10 4.5	-1.1800	0.4932	0.2431	-24	-81
ν Virginis	4.0	1.24	6.1	7 8.0	9 0 32.4	- 9 54.2	-0.4172	0.4922	0.2451	+22	-66
b Virginis	5.8	+1.25	- 7.3	+ 4 15.3	8 27.5	- 2 11.9	+0.8189	0.4903	-0.2480	+90	0
10 Virginis	6.4	1.25	7.6	+ 2 30.1	13 57.3	+ 3 9.0	+1.3970	0.4895	0.2495	+76	+49
γ^1 Virginis	3.1	1.27	8.8	- 0 51.6	10 8 9.3	- 3 8.0	+0.5666	0.4878	0.2514	+78	-14
38 Virginis	6.2	1.26	9.1	2 58.1	14 41.3	+ 3 13.6	+1.2680	0.4874	0.2509	+87	+31
k Virginis	5.9	1.26	9.4	3 13.8	18 21.4	+ 6 47.8	+0.6396	0.4881	0.2504	+84	-10
46 Virginis	6.1	+1.26	- 9.5	- 2 47.3	18 53.3	+ 7 18.9	+0.0167	0.4881	-0.2503	+44	-42
48 Virginis	6.7	1.25	9.5	3 5.0	20 46.1	+ 9 8.8	-0.1260	0.4884	0.2500	+36	-50
θ Virginis	4.6	1.25	9.6	4 57.8	11 0 11.1	-11 31.8	+1.1130	0.4889	0.2492	+85	+18
66 Virginis	6.0	1.25	10.0	4 36.1	8 26.0	- 3 30.0	-1.3350	0.4904	0.2466	-41	-86
l^2 Virginis	5.1	1.25	10.2	5 42.0	12 36.7	+ 0 33.9	-1.1400	0.4911	0.2449	-22	-90
m Virginis	5.4	+1.25	-10.3	- 8 9.6	17 59.5	+ 5 48.0	+0.2852	0.4926	-0.2423	+57	-28
B. A. C. 4591	6.0	1.25	10.3	9 10.1	21 6.0	+ 8 49.4	+0.6758	0.4934	0.2407	+80	- 9
W. xiii, 825	6.8	1.25	10.4	9 1.9	12 1 51.7	-10 32.7	-0.6353	0.4948	0.2377	+ 8	-85
URANUS				12 32.4	12 36.4	- 0 5.8	+0.7498	0.5001	0.2308	+77	- 4
λ Virginis	4.7	1.24	10.5	12 52.5	14 35.7	+ 1 50.2	+0.6639	0.4994	0.2284	+77	- 8
5 Libræ	6.6	+1.23	-10.3	-15 0.4	13 4 55.1	- 8 14.7	-0.1478	0.5064	-0.2148	+30	-52
a^1 Libræ	6.3	1.22	10.2	15 33.0	7 23.7	- 5 50.4	-0.0720	0.5075	0.2118	+36	-47
a^2 Libræ	2.9	1.22	10.2	15 35.7	7 29.8	- 5 44.5	-0.0443	0.5075	0.2118	+35	-46
ν^2 Libræ	6.9	1.21	10.0	16 4.0	15 46.7	+ 2 17.8	-1.2360	0.5119	0.2020	-38	-90
28 Libræ	6.0	1.20	9.9	17 46.0	22 56.5	+ 9 14.8	-0.7660	0.5162	0.1926	- 6	-90
B. A. C. 5109	6.2	+1.18	- 9.5	-19 18.2	14 4 49.1	- 9 3.2	-0.1767	0.5195	-0.1845	+24	-53
41 Libræ	5.9	1.18	9.6	18 56.9	7 57.2	- 6 0.9	-1.1390	0.5212	0.1795	-32	-90
κ Libræ	5.1	1.17	9.5	19 19.8	9 27.6	- 4 33.2	-0.9837	0.5224	0.1771	-21	-90
δ Scorpii	2.6	1.15	8.7	22 18.9	18 23.6	+ 4 6.0	+0.7875	0.5281	0.1627	+68	+ 1
19 Scorpii	5.1	1.11	8.2	23 54.6	15 4 4.2	-10 32.0	+1.0510	0.5340	0.1452	+66	+20
ρ Ophiuchi *mult.*	5.0	+1.10	- 8.2	-23 12.0	6 25.1	- 8 15.7	-0.0697	0.5367	-0.1410	+24	-47
25 Scorpii	6.5	1.06	7.4	25 19.9	16 15.2	+ 1 14.9	+0.9828	0.5414	0.1208	+65	+15
18 Ophiuchi	6.7	1.05	7.5	24 27.0	17 35.9	+ 2 32.8	-0.1441	0.5423	0.1180	+18	-51
B. A. C. 5709	6.3	1.03	7.2	24 55.6	22 14.8	+ 7 2.4	-0.1474	0.5448	0.1079	+17	-52
26 Ophiuchi	6.1	1.03	7.2	24 49.4	22 20.0	+ 7 7.4	-0.2514	0.5448	0.1077	+12	-58
A Ophiuchi	4.7	+0.98	- 6.5	-26 26.7	16 5 9.9	-10 16.8	+0.8156	0.5489	-0.0927	+64	+ 4
38 Ophiuchi	6.7	0.98	6.5	26 30.6	6 9.9	- 9 18.8	+0.7934	0.5494	0.0904	+63	+ 3
θ Ophiuchi	3.3	0.97	6.8	24 53.5	8 8.5	- 7 24.4	-1.1410	0.5500	0.0856	-44	-90
3 Sagittarii *var.*	5.0	0.88	5.5	27 47.4	19 18.4	+ 3 22.0	+1.1999	0.5558	0.0587	+62	+38
B. A. C. 6194	5.1	0.78	5.0	27 4.8	17 8 27.9	- 7 56.9	-0.1239	0.5610	-0.0251	+10	-51
ϕ Sagittarii	3.7	+0.67	- 4.4	-27 6.1	20 10.8	+ 3 20.3	-0.2143	0.5644	+0.0059	+ 4	-57

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

THE STAR'S					AT CONJUNCTION IN R. A.					LIMITING PARALLELS.	
Name.	Mag.	Red'ns from 1892.0. Δα	Red'ns from 1892.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	"	° '	d h m	h m				°	°
σ Sagittarii	2.3	+0.62	-4.4	-26 25.9	**18** 0 14.9	+ 7 15.4	-0.8837	0.5650	+0.0168	-32	-90
τ Sagittarii	3.6	0.57	3.7	27 49.7	5 7.7	+11 57.4	+0.7201	0.5661	0.0299	+62	- 1
B. A. C. 6666	5.8	0.47	3.4	27 12.3	14 45.0	- 2 46.7	+0.4686	0.5669	0.0559	+46	-16
ω Sagittarii	5.1	0.34	3.1	26 35.1	**19** 1 37.8	+ 7 41.9	+0.5762	0.5665	0.0849	+55	-10
A Sagittarii	5.3	+0.33	3.0	26 29.3	2 56.8	+ 8 57.9	+0.5878	0.5663	0.0885	+56	-10
χ Capricorni	5.4	-0.04	-3.5	-21 37.6	**20** 8 27.5	-10 36.5	-0.7658	0.5610	+0.1620	-11	-90
φ Capricorni	5.5	0.07	3.6	21 6.0	11 29.7	- 7 40.9	-0.8087	0.5602	0.1687	-13	-90
33 Capricorni	5.7	0.11	3.4	21 18.6	15 9.4	- 4 9.1	+0.0429	0.5593	0.1769	+32	-41
35 Capricorni	6.2	0.13	3.2	21 39.9	16 29.1	- 2 52.3	+0.6469	0.5589	0.1797	+66	- 8
37 Capricorni	6.0	0.17	3.4	20 33.9	19 47.1	+ 0 18.5	+0.1181	0.5577	0.1866	+38	-37
ε Capricorni	4.7	-0.18	-3.6	-19 57.0	20 45.3	+ 1 14.7	-0.3319	0.5575	+0.1887	+15	-62
κ Capricorni	5.0	0.21	3.7	19 21.6	23 10.3	+ 3 34.5	-0.4747	0.5568	0.1936	+ 8	-73
B. A. C. 7550	6.3	0.21	3.4	20 6.8	23 24.8	+ 3 48.4	+0.3449	0.5565	0.1941	+51	-25
29 Aquarii *mult.*	6.5	0.31	4.0	17 29.1	**21** 7 49.3	+11 55.0	-0.6387	0.5546	0.2105	+ 2	-87
56 Aquarii	6.3	0.45	4.3	15 8.3	20 7.5	- 0 12.8	-0.2934	0.5513	0.2318	+22	-60
τ¹ Aquarii *mult.*	5.8	-0.52	-4.0	-14 37.6	**22** 3 53.0	+ 7 16.5	+1.0340	0.5493	+0.2435	+75	+14
τ² Aquarii	4.1	0.52	4.2	14 9.8	4 43.7	+ 8 5.4	+0.7714	0.5492	0.2447	+76	- 2
74 Aquarii	6.0	0.56	4.6	12 11.5	6 28.4	+ 9 46.5	-0.7825	0.5489	0.2472	- 2	-90
ψ¹ Aquarii	4.1	0.66	4.8	9 40.7	16 31.3	- 4 31.3	-0.7473	0.5468	0.2595	+ 2	-90
ψ² Aquarii	4.2	0.67	4.8	9 46.4	17 26.9	- 3 37.7	-0.4109	0.5467	0.2604	+20	-67
ψ³ Aquarii	4.8	-0.67	-4.6	-10 12.2	17 55.3	- 3 10.2	+0.1414	0.5466	+0.2608	+48	-36
B. A. C. 8274	7.0	0.79	4.8	6 59.0	**23** 7 16.7	+ 9 43.7	+0.5095	0.5466	0.2735	+72	-17
27 Piscium	5.1	0.85	5.2	4 9.4	11 51.7	- 9 50.7	-1.0310	0.5464	0.2766	-14	-90
29 Piscium	5.0	0.86	5.2	3 37.8	13 16.8	- 8 28.5	-1.1600	0.5464	0.2773	-23	-90
4 Ceti	6.0	0.88	5.2	3 9.1	15 57.0	- 5 53.8	-0.8880	0.5464	0.2787	- 4	-90
5 Ceti	6.0	-0.88	-5.2	- 3 3.1	16 9.8	- 5 41.4	-0.9276	0.5464	+0.2790	- 7	-90
B. A. C. 5	5.7	0.89	5.2	2 49.6	16 23.5	- 5 28.2	-1.0860	0.5466	0.2790	-17	-90
10 Ceti	6.2	0.95	5.1	0 39.0	**24** 0 27.5	+ 2 19.2	-0.9679	0.5470	0.2823	- 9	-90
14 Ceti	6.0	0.97	4.7	1 6.0	4 28.1	+ 6 11.6	+0.6091	0.5486	0.2831	+82	-12
15 Ceti	6.8	0.98	4.6	- 1 5.9	5 36.8	+ 7 17.9	+0.9303	0.5487	0.2833	+89	+ 6
77 Piscium	5.9	-1.09	-4.6	+ 4 20.1	17 58.3	- 4 46.2	-0.9040	0.5513	+0.2823	- 5	-86
				NEW	*MOON.*						
A¹ Tauri	4.7	1.23	-0.4	21 47.2	**27** 20 26.4	- 5 4.0	+0.1239	0.5872	0.1765	+50	-24
62 Tauri	6.0	1.20	+3.4	24 3.0	**28** 3 54.6	+ 2 6.2	-0.8754	0.5902	0.1570	- 7	-65
χ¹ Tauri	4.7	-1.17	+3.2	+22 2.8	4 28.2	+ 2 38.5	+1.2040	0.5903	+0.1553	+90	+44
υ¹ Tauri	4.7	1.17	3.3	22 34.1	4 49.5	+ 2 59.0	+0.7396	0.5903	0.1544	+90	+10
υ² Tauri	6.0	1.17	3.4	22 45.1	5 12.4	+ 3 21.0	+0.6172	0.5905	0.1535	+87	+ 4
95 Tauri	6.3	1.11	4.2	23 53.1	11 19.1	+ 9 12.8	+0.3744	0.5924	0.1363	+67	- 7
k Tauri	6.0	1.08	4.8	24 53.0	17 0.6	+14 40.4	+0.1086	0.5939	0.1199	+50	-19
118 Tauri	5.7	-0.94	+5.9	+25 3.8	**29** 4 51.3	+ 2 1.9	+1.1440	0.5950	+0.0842	+90	+45
125 Tauri	6.0	0.89	6.3	25 50.2	8 48.9	+ 5 49.8	+0.6742	0.5950	0.0720	+90	+15
VENUS				26 45.2	11 52.3	+ 8 45.6	-0.0473	0.5542	0.0603	+41	-23
136 Tauri	5.3	0.85	7.0	27 35.2	13 57.2	+10 45.4	-0.7695	0.5947	0.0560	- 2	-62
139 Tauri	5.3	0.81	6.8	25 56.4	15 45.8	+12 29.5	+1.0000	0.5947	0.0505	+90	+37
49 Aurigæ	5.7	-0.61	+8.0	+28 6.3	**30** 5 59.3	+ 2 8.2	-0.8069	0.5898	+0.0063	- 4	-62
54 Auriga	6.0	0.58	8.1	28 21.4	7 40.1	+ 3 45.1	-1.0590	0.5891	+0.0014	-24	-62
25 Geminorum	6.5	0.57	8.1	28 17.8	8 21.7	+ 4 25.0	-0.9982	0.5889	-0.0010	-18	-62
39 Geminorum	6.3	0.46	8.3	26 13.3	15 13.1	+11 0.0	+1.0620	0.5853	0.0215	+90	+43
47 Geminorum	6.0	0.39	8.1	27 2.0	20 9.7	- 8 15.3	+0.0828	0.5826	0.0362	+48	-13
53 Geminorum	6.3	-0.36	+8.4	+28 5.1	21 57.2	- 6 32.0	-1.0760	0.5813	-0.0411	-25	-62
					MAY.						
59 Geminorum	6.9	-0.31	+8.3	+27 50.8	**1** 1 23.6	- 3 13.6	-0.9906	0.5792	-0.0509	-17	-62
υ Geminorum	4.3	0.24	8.1	27 8.1	5 59.6	+ 1 11.6	-0.5156	0.5759	0.0638	+14	-49
c Geminorum	6.0	-0.19	+7.8	+26 2.4	9 21.0	+ 4 25.4	+0.3972	0.5737	-0.0726	+69	0

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
φ Geminorum	5.0	-0.14	+ 8.0	+27 2.7	1 13 11.4	+ 8 7.0	-0.9550	0.5707	-0.0829	-14	-63
ω^1 Cancri	6.0	0.09	7.5	25 41.3	16 17.9	+11 6.5	+0.1961	0.5683	0.0909	+55	-12
ω^2 Cancri	6.3	0.09	7.5	25 23.2	16 38.4	+11 26.3	+0.4834	0.5678	0.0919	+76	+ 2
ψ^1 Cancri	6.8	0.03	7.6	26 9.7	20 11.2	- 9 8.9	-0.6738	0.5648	0.1006	+ 5	-62
ψ^2 Cancri	5.7	-0.03	7.5	25 50.0	20 17.6	- 9 2.6	-0.3386	0.5645	0.1007	+24	-42
λ Cancri	5.7	+0.04	+ 6.8	+24 21.7	2 0 36.0	- 4 53.7	+0.7565	0.5608	-0.1114	+90	+15
υ^1 Cancri *mult.*	6.0	0.08	7.0	24 53.4	3 13.2	- 2 22.2	-0.1004	0.5585	0.1175	+38	-30
υ^2 Cancri	5.8	0.10	6.8	24 30.2	4 4.0	- 1 33.3	+0.2080	0.5577	0.1192	+56	-15
υ^3 Cancri	6.0	0.12	6.8	24 26.7	5 19.5	- 0 20.4	+0.1165	0.5567	0 1223	+50	-19
υ^4 Cancri	5.7	0.13	6.8	24 27.1	5 58.3	+ 0 17.0	+0.0336	0.5562	0.1237	+45	-24
ξ Cancri	5.0	+0.36	+ 5.4	+22 28.9	22 13.1	- 8 2.1	-0.1605	0.5419	-0.1570	+34	-38
79 Cancri	6.3	0.37	5.4	22 26.0	22 40.4	- 7 35.7	-0.1784	0.5417	0.1579	+33	-39
B. A. C. 3138	6.0	0.39	5.0	21 43.7	3 0 11.4	- 6 7.8	+0.3321	0.5401	0.1606	+63	-13
B. A. C. 3206	6.3	0.45	4.2	20 15 3	5 23.5	- 1 6.1	+1.0560	0.5357	0.1699	+90	+28
η Leonis	3.3	0.67	1.9	17 17.2	4 2 2.7	- 5 6.2	+0.4252	0.5188	0.2010	+69	-13
42 Leonis	6.0	+0.74	+ 0.8	+15 31.1	9 23.6	+ 2 1.3	+0.8383	0.5133	-0.2101	+90	+ 8
i Leonis	5.7	0.79	+ 0.2	14 41.4	14 43.5	+ 7 11.7	+0.6074	0.5089	0.2158	+84	- 6
k Leonis	5.7	0.86	- 0.3	14 45.8	22 10.2	- 9 34.7	-1.1090	0.5051	0.2230	-20	-75
ω Virginis	5.9	1.06	4.1	8 43.8	6 2 28.3	- 6 4.1	-1.1100	0.4919	0.2431	-19	-81
ν Virginis	4.0	1.07	4.6	7 8.0	6 36.3	- 2 2.9	-0.3555	0.4905	0.2447	+25	-62
b Virginis	5.8	+1.11	- 5.8	+ 4 15.3	14 32.0	+ 5 40.0	+0.8742	0.4884	-0.2477	+90	+ 4
γ^1 Virginis	3.1	1.23	8.2	- 0 51.6	7 14 17.2	+ 4 47.3	+0.6064	0.4856	0.2511	+82	-12
38 Virginis	6.2	1.26	8.9	2 58.1	20 50.2	+11 9.9	+1.3070	0.4862	0.2506	+87	+36
k Virginis	5.9	1.28	9.1	3 13.8	8 0 30.5	- 9 15.6	+0.6776	0.4866	0.2501	+86	- 8
46 Virginis	6.1	1.28	9.1	2 47.3	1 2.7	- 8 44.0	+0.0518	0.4866	0.2501	+45	-40
48 Virginis	6.7	+1.29	- 9.2	- 3 5.0	2 55.6	- 6 54.3	-0.0907	0.4871	-0.2499	+38	-48
θ Virginis	4.6	1.30	9.7	4 57.8	6 21.2	- 3 34.2	+1.1420	0.4874	0.2491	+85	+21
66 Virginis	6.0	1.34	9.8	4 36.1	14 36.9	+ 4 28.3	-1.3050	0.4894	0.2465	-37	-89
l^2 Virginis	5.1	1.36	10.1	5 42.0	18 47.9	+ 8 32.6	-1.1130	0.4904	0.2451	-20	-90
m Virginis	5.4	1.38	10.6	8 9.6	9 0 10.9	-10 13.1	+0.3074	0.4917	0.2426	+58	-27
B. A. C. 4591	6.0	+1.39	-10.7	- 9 10.1	3 17.6	- 7 11.5	+0.6757	0.4928	-0.2403	+81	- 8
W. xiii, 825	6.8	1.41	10.8	9 1.9	8 3.2	- 2 33.7	-0.6145	0.4944	0.2381	+ 9	-83
URANUS				12 9.6	16 23.6	+ 5 32.9	+0.8950	0.4991	0.2331	+78	+ 5
λ Virginis	4.7	1.47	11.4	12 52 5	20 45.7	+ 9 47.7	+0.6803	0.4997	0.2289	+77	- 7
5 Libræ	6.6	1.54	11.4	15 0.4	10 11 3.8	- 0 18.6	-0.1384	0.5072	0.2155	+31	-50
α^1 Libræ	6.3	+1.55	-11.5	-15 33.0	13 32.0	+ 2 5.3	-0.0664	0.5086	-0.2126	+33	-47
α^2 Libræ	2.9	1.55	11.5	15 35.7	13 38.1	+ 2 11.2	-0.0387	0.5086	0.2126	+35	-45
υ^2 Libræ	6.9	1.60	11.3	16 4.0	21 53.0	+10 11.6	-1.2300	0.5135	0.2030	-37	-90
28 Libræ	6.0	1.61	11.2	17 46.0	11 5 0.9	- 6 53.3	-0.7674	0.5177	0.1936	- 6	-90
B. A. C. 5109	6.2	1.62	11.0	19 18.2	10 51.3	- 1 13.6	-0.1782	0.5210	0.1851	+24	-53
41 Libræ	5.9	+1.63	-10.8	-18 56.9	13 58.6	+ 1 47.9	-1.1390	0.5234	-0.1805	-32	-90
κ Libræ	5.1	1.63	10.8	19 19.8	15 28.3	+ 3 14.9	-0.9856	0.5243	0.1782	-21	-90
δ Scorpii	2.6	1.64	10.7	22 18.9	12 0 21.2	+11 51.1	+0.7785	0.5304	0.1635	+68	0
19 Scorpii	5.1	1.66	10.2	23 54.6	9 58.1	- 2 50.7	+1.0400	0.5364	0.1461	+66	+19
ρ Ophiuchi *mult.*	5.0	1.68	9.7	23 12.0	12 18.1	- 0 35.3	-0.0749	0.5381	0.1416	+24	-47
25 Scorpii	6.5	+1.69	- 9.4	-25 20.0	22 4.6	+ 8 51.7	+0.9729	0.5443	-0.1217	+65	+14
18 Ophiuchi	6.7	1.70	8.8	24 27.1	23 24.7	+10 9.0	-0.1512	0.5449	0.1190	+18	-52
B. A. C. 5709	6.3	1.70	8.3	24 55.7	13 4 1.8	- 9 23.2	-0.1564	0.5476	0.1086	+16	-52
26 Ophiuchi	6.1	1.70	8.3	24 49.5	4 7.0	- 9 18.2	-0.2783	0.5476	0.1083	+10	-60
A Ophiuchi	4.7	1.70	7.4	26 26.7	10 54.7	- 2 44.6	+0.8004	0.5512	0.0931	+64	+ 3
38 Ophiuchi	6.7	+1.69	- 7.4	-26 30.6	11 54.3	- 1 47.0	+0.7820	0.5520	-0.0907	+63	+ 2
θ Ophiuchi	3.3	1.68	7.4	24 53.5	13 52.2	+ 0 6.7	-1.1530	0.5527	0.0861	-46	-90
3 Sagittarii *var.*	5.0	1.67	5.9	27 47.4	14 0 59.3	+10 50.3	+1.1840	0.5578	0.0591	+62	+36
B. A. C. 6194	5.1	1.61	4.8	27 4.8	14 6.8	- 0 30.6	-0.1368	0.5627	-0.0252	+ 9	-51
φ Sagittarii	3.7	1.54	3.7	27 6.1	15 1 49.7	+10 46.6	-0.2275	0.5652	+0.0059	+ 3	-57
σ Sagittarii	2.3	+1.51	- 3.4	-26 25.9	5 54.3	- 9 17.8	-0.9012	0.5654	+0.0164	-33	-90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0. Δα	Red'ns from 1892.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	″	° ′	d h m	h m				°	°
τ Sagittarii	3.6	+1.48	-2.6	-27 49.7	15 10 48.1	- 4 34.8	+0.7120	0.5658	+0.0300	+61	- 2
B. A. C. 6666	5.8	1.39	1.7	27 12.3	20 28.3	+ 4 44.0	+0.4604	0.5658	0.0560	+45	-17
ω Sagittarii	5.1	1.27	0.7	26 35.1	16 7 26.5	- 8 42.0	+0.5696	0.5645	0.0849	+54	-11
A Sagittarii	5.3	1.26	-0.6	26 29.3	8 46.3	- 7 25.2	+0.5834	0.5643	0.0882	+56	-10
χ Capricorni	5.4	0.88	+0.5	21 37.5	17 14 44.6	- 2 32.3	-0.7823	0.5554	0.1603	-12	-90
ϕ Capricorni	5.5	+0.83	+0.6	-21 5.9	17 50.6	+ 0 27.4	-0.8230	0.5542	+0.1670	-13	-90
33 Capricorni	5.7	0.78	0.9	21 18.5	21 35.4	+ 4 4.3	+0.0382	0.5531	0.1751	+33	-41
35 Capricorni	6.2	0.77	1.1	21 39.8	22 56.8	+ 5 22.9	+0.6459	0.5525	0.1778	+66	- 8
37 Capricorni	6.0	0.72	1.0	20 33.8	18 2 19.4	+ 8 38.4	+0.1127	0.5512	0.1846	+38	-37
ε Capricorni	4.7	0.70	0.9	19 56.9	3 19.2	+ 9 36.1	-0.3430	0.5509	0.1866	+15	-64
κ Capricorni	5.0	+0.67	+0.9	-19 21.5	5 47.8	+11 59.5	-0.4862	0.5500	+0.1914	+ 8	-74
B. A. C. 7550	6.3	0.67	1.0	20 6.7	6 2.7	-11 46.1	+0.3426	0.5500	0.1918	+51	-25
29 Aquarii *mult.*	6.5	0.55	0.9	17 29.0	14 43.6	- 3 23.2	-0.6522	0.5466	0.2075	+ 1	-89
56 Aquarii	6.3	0.38	0.9	15 8.1	19 3 20.5	+ 8 47.9	-0.3010	0.5424	0.2282	+22	-60
τ^1 Aquarii	5.8	0.28	1.2	14 37.4	11 20.6	- 7 28.1	+1.0470	0.5400	0.2400	+75	+15
τ^2 Aquarii	4.1	+0.27	+1.1	-14 9.6	12 13.0	- 6 37.6	+0.7818	0.5401	+0.2408	+76	- 1
74 Aquarii	6 0	0.23	0.6	12 11.4	14 1.3	- 4 52.9	-0.7949	0.5400	0.2432	- 3	-90
ψ^1 Aquarii	4.1	0.10	0.3	9 40.6	20 0 24.4	+ 5 9.5	-0.7584	0.5378	0.2553	+ 1	-90
ψ^2 Aquarii	4.2	0.08	0.4	9 46.3	1 21.7	+ 6 4.9	-0.4163	0.5376	0.2563	+19	-68
ψ^3 Aquarii	4.8	+0.08	0.6	10 12.1	1 51.0	+ 6 33.3	+0.1437	0.5374	0.2567	+48	-36
B. A. C. 8274	7.0	-0.09	+0.3	- 6 58.9	15 40.3	- 4 4.9	+0.5193	0.5365	+0.2687	+73	-16
27 Piscium	5.1	0.15	-0.4	4 9.3	20 24.6	+ 0 30.1	-1.0440	0.5365	0.2716	-14	-90
29 Piscium	5.0	0.17	0.5	3 37.7	21 52.8	+ 1 55.3	-1.1750	0.5367	0.2726	-24	-90
4 Ceti	6.0	0.20	0.5	3 9.0	21 0 38.4	+ 4 35.5	-0.9005	0.5368	0.2740	- 6	-90
5 Ceti	6.0	0.21	0.5	3 3.0	0 51.5	+ 4 48.1	-0.9406	0.5367	0.2740	- 7	-90
B. A. C. 5	5.7	-0.21	-0.5	- 2 49.5	1 5.8	+ 5 2.0	-1.1010	0.5368	+0.2742	-18	-90
10 Ceti	6.2	0.31	0.7	0 38.9	9 26.1	-10 54.3	-0.9788	0.5378	0.2773	- 9	-90
14 Ceti	6.0	0.31	0.3	1 5.9	13 34.7	- 6 53.9	+0.6227	0.5388	0.2783	+83	-10
15 Ceti	6.8	0.34	0.2	- 1 5.8	14 45.7	- 5 45.3	+0.9486	0.5391	0.2783	+89	+ 8
77 Piscium	5.9	0.52	0.9	+ 4 20.0	22 3 30.1	+ 6 33.6	-0.9133	0.5429	0.2780	- 5	-86
B. A. C. 410	6.0	-0.61	-1.0	+ 6 50.7	11 15.8	- 9 56.5	-1.2570	0.5458	+0.2755	-31	-83
96 Piscium	6.6	0.62	0.8	6 44.1	14 1.4	- 7 16.6	-0.3868	0.5473	0.2744	+23	-64
μ Piscium	5.0	0.62	0.5	5 35.1	14 31.4	- 6 47.6	+0.8876	0.5475	0.2739	+90	+ 5
o Piscium	4.4	0.69	0.7	8 36.7	21 18.5	- 0 14.6	-0.2654	0.5507	0.2698	+29	-56
29 Arietis	6.3	0.86	-0.2	14 33.3	23 17 53.9	- 4 23.1	-0.7784	0.5632	0.2487	+ 2	-75
o Arietis	6.0	-0.90	+0.2	+14 51.1	22 48.7	+ 0 20.9	+0.1332	0.5665	+0.2416	+51	-30
				NEW	*MOON.*						
136 Tauri	5.3	0.91	6.1	27 35.2	27 0 12.4	- 1 11.2	-0.7823	0.6009	0.0561	- 2	-62
139 Tauri	5.3	0.88	6.1	25 56.4	1 59.0	+ 0 30.9	+0.9714	0.6008	0.0508	+90	+35
49 Aurigæ	5.7	-0.76	+7.2	+28 6.3	15 55.3	-10 7.7	-0.8247	0.5974	+0.0061	- 6	-62
54 Aurigæ	6.0	0.75	7.3	28 21.4	17 34.1	- 8 32.9	-1.0740	0.5969	+0.0010	-25	-62
25 Geminorum	6.5	0.73	7.3	28 17.8	18 14.7	- 7 54.0	-1.0140	0.5968	-0.0012	-20	-62
39 Geminorum	6.3	0.66	7.2	26 13.3	28 0 56.4	- 1 28.8	+1.0230	0.5939	0.0222	+90	+41
47 Geminorum	6.0	0.60	7.5	27 2.0	5 45.8	+ 3 8.8	+0.0512	0.5912	0.0367	+46	-15
53 Geminorum	6.3	-0.58	+7.8	+28 5.1	7 30.7	+ 4 49.6	-1.0960	0.5899	-0.0421	-27	-62
59 Geminorum	6.9	0.53	7.8	27 50.8	10 52.0	+ 8 2.8	-1.0100	0.5878	0.0521	-19	-62
υ Geminorum	4.3	0.47	7.8	27 8.1	15 21.1	-11 38.9	-0.5454	0.5852	0.0650	+12	-51
c Geminorum	6.0	0.43	7.6	26 2.4	18 37.2	- 8 30.4	+0.3599	0.5821	0.0744	+66	- 2
φ Geminorum	5.0	0.38	7.8	27 2.7	22 21.7	- 4 54.7	-0.9790	0.5793	0.0846	-16	-63
ω^1 Cancri	6.0	-0.34	+7.6	+25 41.3	29 1 23.4	- 2 0.0	+0.1574	0.5765	-0.0929	+52	-14
ω^2 Cancri	6.3	0.34	7.5	25 23.2	1 43.3	- 1 40.9	+0.4413	0.5762	0.0936	+72	0
ψ^1 Cancri	6.8	0.29	7.6	26 9.7	5 10.6	+ 1 38.5	-0.7041	0.5732	0.1025	+ 3	-63
ψ^2 Cancri	5.7	0.29	7.6	25 50.0	5 16.9	+ 1 44.6	-0.3728	0.5732	0.1027	+22	-43
λ Cancri	5.7	0 23	7.2	24 21.7	9 28.5	+ 5 46.7	+0.7078	0.5696	0.1132	+90	+13
υ^1 Cancri *mult.*	6.0	-0.20	+7.3	+24 53.4	12 1.6	+ 8 14.1	-0.1412	0.5671	-0.1193	+35	-32

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
MAY.											
		s	″	° ′	d h m	h m				°	°
ν^2 Cancri	5.8	-0.19	+ 7.2	+24 30.2	**29** 12 51.1	+ 9 1.7	+0.1656	0.5661	-0.1214	+53	-17
ν^3 Cancri	6.0	0.17	7.2	24 26.7	14 4.6	+10 12.5	+0.0750	0.5650	0.1240	+46	-22
ν^4 Cancri	5.7	-0.17	7.2	24 27.1	14 42.5	+10 49.0	-0.0105	0.5643	0.1258	+42	-26
ξ Cancri	5.0	+0.04	6.2	22 28.9	**30** 6 33.1	+ 2 5.7	-0.2063	0.5492	0.1595	+32	-40
79 Cancri	6.3	0.04	6.2	22 26.0	6 59.4	+ 2 31.1	-0.2257	0.5487	0.1603	+31	-41
B. A. C. 3138	6.3	+0.06	+ 6.0	+21 43.7	8 28.2	+ 3 56.8	+0.2841	0.5473	-0.1630	+60	-15
B. A. C. 3206	6.3	0.11	5.7	20 15.3	13 33.0	+ 8 51.2	+0.9949	0.5423	0.1725	+90	+23
η Leonis	3.3	0.35	3.4	17 17.3	**31** 9 45.3	+ 4 24.1	+0.3618	0.5240	0.2032	+65	-17
42 Leonis	6.0	0.41	2.2	15 31.2	16 58.0	+11 23.4	+0.7714	0.5180	0.2120	+90	+ 3
i Leonis	5.7	+0.48	+ 1.9	+14 41.5	22 12.4	- 7 31.8	+0.5425	0.5139	0.2177	+78	- 9
JUNE.											
k Leonis	5.7	+0.56	+ 1.5	+14 45.8	**1** 5 31.8	- 0 25.4	-1.1600	0.5087	-0.2249	-24	-75
ω Virginis	5.9	0.80	- 2.1	8 43.8	**2** 9 29.7	+ 2 44.8	-1.1650	0.4933	0.2436	-23	-81
ν Virginis	4.0	+0.84	- 2.8	+ 7 8.0	13 35.8	+ 6 44.2	-0.4140	0.4918	-0.2453	+22	-66
b Virginis	5.8	0.89	4.2	4 15.3	21 28.3	- 9 36.1	+0.8095	0.4891	0.2479	+90	0
10 Virginis	6.4	0.92	5.1	+ 2 30.1	**3** 2 56.9	- 4 16.4	+1.3800	0.4877	0.2492	+80	+46
γ Virginis (*mean.*)	3.1	1.06	6.9	- 0 51.6	21 7.7	-10 34.6	+0.5476	0.4854	0.2506	+77	-15
38 Virginis	6.2	1.10	7.7	2 58.1	**4** 3 39.7	- 4 13.1	+1.2460	0.4856	0.2501	+87	+29
k Virginis	5.9	+1.13	- 7.9	- 3 13.8	7 19.8	- 0 38.7	+0.6203	0.4857	-0.2494	+82	-11
46 Virginis	6.1	1.14	7.8	2 47.3	7 52.0	- 0 7.3	-0.0018	0.4860	0.2494	+43	-43
48 Virginis	6.7	1.15	8.0	3 5.0	9 44.9	+ 1 42.5	-0.1456	0.4863	0.2492	+35	-51
θ Virginis	4.6	1.18	8.6	4 57.8	13 10.1	+ 5 2.2	+1.0880	0.4864	0.2482	+85	+17
66 Virginis	6.0	1.25	8.8	4 36.1	21 25.5	-10 55.5	-1.3520	0.4881	0.2456	-42	-84
l^2 Virginis	5.1	+1.28	- 9.2	- 5 42.0	**5** 1 36.6	- 6 51.2	-1.1600	0.4891	-0.2439	-23	-90
m Virginis	5.4	1.32	9.9	8 9.6	6 59.7	- 1 36.7	+0.2605	0.4908	0.2414	+56	-30
B. A. C. 4591	6.0	1.35	10.2	9 10.1	10 6.2	+ 1 24.7	+0.6299	0.4917	0.2400	+78	-10
W. xiii, 825	6.8	1.39	10.3	9 1.9	14 51.9	+ 6 2.6	-0.6557	0.4934	0.2370	+ 7	-87
URANUS				11 51.1	21 14.4	-11 45.5	+0.9677	0.4972	0.2332	+78	+10
λ Virginis	4.7	+1.49	-11.3	-12 52.5	**6** 3 34.2	- 5 36.2	+0.6439	0.4989	-0.2278	+76	- 9
5 Libræ	6.6	1.62	11.6	15 0.4	17 51.5	+ 8 16.7	-0.1639	0.5065	0.2147	+29	-52
a^1 Libræ	6.3	1.64	11.7	15 33.0	20 19.5	+10 40.4	-0.0902	0.5081	0.2120	+32	-48
a^2 Libræ	2.9	1.64	11.7	15 35.7	20 25.6	+10 46.3	-0.0644	0.5083	0.2118	+44	-47
ν^2 Libræ	6.9	1.72	11.5	16 4.0	**7** 4 39.4	- 5 14.5	-1.2460	0.5135	0.2023	-39	-90
28 Libræ	6.0	+1.78	-11.6	-17 46.0	11 46.0	+ 1 39.3	-0.7782	0.5184	-0.1932	- 7	-90
B. A. C. 5109	6.2	1.83	11.6	19 18.2	17 35.2	+ 7 17.9	-0.1869	0.5220	0.1847	+23	-54
41 Libræ	5.9	1.85	11.5	18 56.9	20 41.5	+10 18.4	-1.1430	0.5243	0.1801	-32	-90
κ Libræ	5.1	1.87	11.4	19 19.8	22 10.9	+11 45.0	-0.9902	0.5253	0.1777	-22	-90
δ Scorpii	2.6	1.94	11.1	22 18.9	**8** 7 1.0	- 3 41.6	+0.7780	0.5318	0.1632	+68	0
19 Scorpii	5.1	+2.03	-10.6	-23 54.6	16 34.1	+ 5 32.9	+1.0460	0.5386	-0.1457	+66	+20
ρ Ophiuchi *mult.*	5.0	2.03	10.5	23 12.0	18 53.1	+ 7 47.3	-0.0655	0.5401	0.1413	+25	-47
25 Scorpii	6.5	2.11	9.8	25 20.0	**9** 4 35.0	- 6 50.3	+0.9874	0.5469	0.1214	+65	+16
18 Ophiuchi	6.7	2.11	9.6	24 27.1	5 54.3	- 5 33.8	-0.1324	0.5475	0.1185	+18	-51
B. A. C. 5709	6.3	2.14	9.1	24 55.7	10 28.9	- 1· 8.6	-0.1322	0.5505	0.1083	+17	-50
26 Ophiuchi	6.1	+2.14	- 9.1	-24 49.5	10 34.1	- 1 3.6	-0.2536	0.5507	-0.1083	+11	-58
A Ophiuchi	4.7	2.19	8.4	26 26.8	17 17.9	+ 5 26.1	+0.8279	0.5547	0.0929	+64	+ 5
38 Ophiuchi	6.7	2.19	8.3	26 30.7	18 16.9	+ 6 23.1	+0.8097	0.5555	0.0906	+63	+ 4
θ Ophiuchi	3.3	2.17	8.1	24 53.6	20 13.6	+ 8 15.6	-1.1160	0.5565	0.0856	-42	-90
3 Sagittarii *var.*	5.0	2.26	6.8	27 47.4	**10** 7 13.7	- 5 7.9	+1.2220	0.5622	0.0585	+62	+42
B. A. C. 6194	5.1	+2.26	- 5.0	-27 4.8	20 12.5	+ 7 22.5	-0.0878	0.5669	-0.0244	+12	-48
φ Sagittarii	3.7	2.25	3.4	27 6.1	**11** 7 47.4	- 5 28.1	-0.1659	0.5696	+0.0068	+ 6	-53
σ Sagittarii	2.3	2.22	2.9	26 25.9	11 49.4	- 1 35.3	-0.8318	0.5701	0.0178	-28	-90
τ Sagittarii	3.6	2.23	2.0	27 49.7	16 40.0	+ 3 4.5	+0.7769	0.5705	0.0311	+62	+ 2
B. A. C. 6666	5.8	2.18	- 0.7	27 12.2	**12** 2 14.3	-11 42.6	+0.5315	0.5698	0.0571	+50	-13
ω Sagittarii	5.1	+2.11	+ 0.8	-26 35.0	13 6.6	- 1 14.5	+0.6530	0.5682	+0.0861	+60	- 6

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	° ′	d h m	h m				°	°
A Sagittarii	5.3	+2.10	+1.0	-26 29.2	**12** 14 25.8	+ 0 1.7	+0.6651	0.5680	+0.0896	+61	- 5
χ Capricorni	5.4	1.76	3.9	21 37.5	**13** 20 15.2	+ 4 46.0	-0 6732	0.5571	0.1614	- 6	-90
27 Capricorni	6.5	1.75	3.8	20 59.3	20 41.3	+ 5 11.2	-1.2700	0.5568	0.1624	-50	-83
φ Capricorni	5.5	1.72	4.1	21 5.9	23 21.0	+ 7 45.2	-0.7108	0.5554	0.1680	- 7	-90
33 Capricorni	5.7	1.68	4.7	21 18.5	**14** 3 5.8	+11 22.1	+0.1514	0.5540	0.1759	+39	-35
35 Capricorni	6.2	+1.68	+4.9	-21 39.8	4 27.4	-11 19.2	+0.7617	0.5531	+0.1786	+68	- 1
37 Capricorni	6.0	1.62	5.0	20 33.8	7 50.4	- 8 3.2	+0.2293	0.5517	0.1854	+44	-31
ε Capricorni	4.7	1.61	5.0	19 56.9	8 50.2	- 7 5.5	-0.2256	0.5513	0.1872	+21	-56
κ Capricorni	5.0	1.58	5.1	19 21.5	11 19.3	- 4 41.6	-0.3678	0.5503	0.1919	+14	-65
B. A. C. 7550	6.3	1.59	5.3	20 6.7	11 34.1	- 4 27.4	+0.4649	0.5501	0.1923	+58	-18
29 Aquarii *mult.*	6.5	+1.46	+5.4	-17 29.0	20 14.5	+ 3 55.1	-0.5308	0.5459	+0.2078	+ 8	-77
56 Aquarii	6.3	1.30	5.9	15 8.1	**15** 9 0.8	- 7 44.4	-0.1738	0.5403	0.2277	+28	-53
τ^1 Aquarii *mult.*	5.8	1.17	6.5	14 37.4	17 6.7	+ 0 5.3	+1.1900	0.5371	0.2386	+75	+27
τ^2 Aquarii	4.1	1.16	6.4	14 9.6	17 59.8	+ 0 56.6	+0.9210	0.5370	0.2397	+76	+ 7
74 Aquarii	6.0	1.12	5.9	12 11.3	19 49.5	+ 2 42.7	-0.6685	0.5363	0.2418	+ 4	-89
ψ^1 Aquarii	4.1	+0.97	+5.9	- 9 40.5	**16** 6 22.6	-11 4.9	-0.6302	0.5332	+0.2533	+ 8	-84
ψ^2 Aquarii	4.2	0.96	6.0	9 46.2	7 21.0	-10 8.4	-0.2869	0.5332	0.2543	+26	-59
ψ^3 Aquarii	4.8	0.96	6.2	10 12.0	7 50.9	- 9 39.4	+0.2816	0.5330	0.2548	+56	-28
B. A. C. 8274	7.0	0.76	6.0	6 58.8	21 57.0	+ 3 59.3	+0.6609	0.5304	0.2656	+82	- 9
27 Piscium	5.1	0.68	5.3	4 9.2	**17** 2 47.9	+ 8 40.9	-0.9260	0.5302	0.2684	- 7	-90
29 Piscium	5.0	+0.66	+5.3	- 3 37.6	4 18.2	+10 8.2	-1.0530	0.5302	+0.2693	-15	-90
4 Ceti	6.0	0.63	5.2	3 8.9	7 7.9	-11 7.5	-0.7759	0.5302	0.2705	+ 2	-90
5 Ceti	6.0	0.63	5.2	3 2.9	7 21.3	-10 54.5	-0.8183	0.5302	0.2705	0	-90
B. A. C. 5	5.7	0.63	5.1	2 49.4	7 36.1	-10 40.2	-0.9804	0.5301	0 2705	-10	-90
10 Ceti	6.2	0.52	4.9	0 38.8	16 9.3	- 2 23.5	-0.8596	0.5306	0.2732	- 2	-90
14 Ceti	6.0	+0.47	+5.3	- 1 5.8	20 24.7	+ 1 43.7	+0.7607	0.5309	+0.2738	+89	- 4
15 Ceti	6.8	0.46	5.3	- 1 5.7	21 37.5	+ 2 54.1	+1.0890	0.5313	0.2739	+89	+17
77 Piscium	5.9	0.28	4.2	+ 4 20.0	**18** 10 44.3	- 8 24.7	-0.8017	0.5344	0.2731	+ 1	-86
ε Piscium	5.5	0.27	4.1	5 4.7	11 57.0	- 7 14.3	-1.2230	0.5347	0.2727	-27	-85
JUPITER				6 47.5	18 32.0	- 0 52.3	-1.1580	0.5310	0.2685	-22	-83
B. A. C. 410	6.0	+0.18	+3.8	+ 6 50.8	18 44.0	- 0 40.7	-1.1590	0.5373	+0.2704	-22	-83
96 Piscium	6.6	0.15	4.0	6 44.2	21 34.6	+ 2 4.3	-0.2766	0.5384	0.2690	+29	-57
μ Piscium	5.0	0.13	4.3	5 35.2	22 5.6	+ 2 34.3	+1.0160	0.5384	0.2688	+90	+13
ο Piscium	4.4	+0.06	3.8	8 36.8	**19** 5 5.1	+ 9 19.8	-0.4624	0.5421	0.2646	+34	-50
29 Arietis	6.3	-0.17	3.1	14 33.4	**20** 2 18.0	+ 5 48.8	-0.7042	0.5546	0.2436	+ 6	-75
ο Arietis	6.0	-0.22	+3.3	+14 51.2	7 21.4	+10 41.5	+0.2135	0.5578	+0.2369	+55	-26
σ Arietis	5.5	0.24	3.5	14 38.2	10 20.7	-10 25.6	+1.1320	0.5602	0.2325	+90	+27
ρ^1 Arietis	7.0	0.27	3.0	17 17.7	11 46.7	- 9 2.8	-1.1980	0.5611	0.2307	-29	-73
53 Arietis	6.3	0.31	3.2	17 27.7	17 5.2	- 3 55.9	-0.1651	0.5653	0.2215	+34	-44
54 Arietis	6.3	0.31	3.1	18 22.8	17 27.5	- 3 34.4	-1.0000	0.5654	0.2209	-13	-72
13 Tauri	5.7	-0.42	+3.6	+19 21.2	**21** 7 30.1	+ 9 56.6	+0.9437	0.5754	+0.1936	+90	+19
14 Tauri	6.3	0.42	3.7	19 19.5	8 5.7	+10 30.9	+1.0870	0.5759	0.1924	+90	+29
B. A. C. 1143	6.0	0.43	3.7	20 35.3	8 21.4	+10 46.0	-0.1268	0.5761	0.1918	+36	-38
B. A. C. 1189	6.0	0.46	3.4	21 55.0	10 32.4	-11 8.1	-1.0400	0.5777	0.1869	-18	-68
32 Tauri	6.0	0.47	3.5	22 10.0	13 19.8	- 8 27.1	-0.7805	0.5797	0.1806	0	-68
A^1 Tauri	4.7	-0.49	+3.7	+21 47.2	16 27.8	- 5 26.4	+0.1552	0.5820	+0.1734	+52	-22
A^2 Tauri	6.3	0.50	3.8	21 43.1	16 42.9	- 5 11.8	+0.2687	0.5824	0.1728	+59	-16
62 Tauri	6.0	0.55	3.9	24 3.0	**22** 0 3.0	+ 1 50.9	-0.8672	0.5870	0.1545	- 7	-66
υ^1 Tauri	4.7	0.53	4.2	22 34.1	0 58.6	+ 2 44.3	+0.7619	0.5875	0.1521	+90	+12
υ^2 Tauri	6.0	0.54	4.2	22 45.1	1 21.7	+ 3 6.5	+0.6351	0.5878	+0.1511	+89	+ 5
				NEW	*MOON.*						
υ Geminorum	4.3	-0.42	+7.1	+27 8.1	**25** 1 10.4	- 0 1.5	-0.6240	0.5879	-0.0667	+ 7	-57
c Geminorum	6.0	0.40	7.0	26 2.4	4 24.9	+ 3 5.3	+0.2730	0.5857	0.0759	+61	- 7
φ Geminorum	5.0	0.37	7.1	27 2.7	8 7.3	+ 6 38.9	-1.0640	0.5835	0.0864	-23	-63
ω^1 Cancri	6.0	-0.35	+7.0	+25 41.3	11 7.1	+ 9 31.7	+0.0638	0.5809	-0.0946	+47	-19

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
JUNE.											
ω^2 Cancri	6.3	−0.35	+ 7.0	+25 23.2	25 11 26.8	+ 9 50.7	+0.3445	0.5805	−0.0954	+65	− 5
ψ^1 Cancri	6.8	0.32	7.1	26 9.7	14 51.8	−10 52.3	−0.7995	0.5779	0.1045	− 3	−64
ψ^2 Cancri	5.7	0.32	7.0	25 50.0	14 58.0	−10 46.3	−0.4697	0.5779	0.1048	+17	−49
λ Cancri	5.7	0.28	6.9	24 21.7	19 6.6	− 6 47.2	+0.6005	0.5741	0.1154	+86	+ 6
υ^1 Cancri *mult.*	6.0	0.26	6.9	24 53.4	21 37.8	− 4 21.7	−0.2478	0.5718	0.1216	+29	−38
υ^2 Cancri	5.8	−0.25	+ 6.8	+24 30.2	22 26.7	− 3 34.6	+0.0555	0.5714	−0.1238	+46	−22
υ^3 Cancri	6.0	0.24	6.8	24 26.7	23 39.3	− 2 24.7	−0.0364	0.5701	0.1267	+41	−28
υ^4 Cancri	5.7	0.24	6.8	24 27.1	26 0 16.6	− 1 48.8	−0.1214	0.5697	0.1281	+36	−32
ξ Cancri	6.0	0.10	6.2	22 28.9	15 52.7	−10 46.7	−0.3362	0.5552	0.1621	+25	−47
79 Cancri	6.3	0.09	6.2	22 26.0	16 19.0	−10 21.3	−0.3555	0.5546	0.1630	+23	−49
B. A. C. 3138	6.3	−0.08	+ 6.1	+21 43.7	17 46.3	− 8 57.2	+0.1437	0.5531	−0.1659	+51	−23
B. A. C. 3206	6.3	−0.03	5.8	20 15.3	22 46.1	− 4 7.7	+0.8453	0.5480	0.1752	+90	+14
η Leonis	3.3	+0.15	4.2	17 17.3	27 18 37.7	− 8 55.6	+0.1954	0.5295	0.2062	+54	−25
42 Leonis	6.0	0.21	3.4	15 31.2	28 1 43.0	− 2 3.7	+0.5941	0.5235	0.2150	+82	− 6
i Leonis	5.7	0.35	+ 3.0	14 41.5	6 51.9	+ 2 55.6	+0.3614	0.5192	0.2206	+64	−19
ν Virginis	4.0	0.57	− 1.3	+ 7 8.0	29 21 40.2	− 7 23.6	−0.6170	0.4944	−0.2472	+11	−79
b Virginis	5.8	0.63	2.6	4 15.3	30 5 27.2	+ 0 10.6	+0.5984	0.4918	0.2498	+81	−12
10 Virginis	6.4	+0.67	− 3.5	+ 2 30.1	10 52.4	+ 5 26.9	+1.1680	0.4903	−0.2504	+90	+23
JULY.											
γ Virginis *mean.*	3.1	+0.83	− 5.3	− 0 51.6	1 4 54.1	− 1 0.5	+0.3398	0.4870	−0.2512	+62	−26
38 Virginis	6.2	0.88	6.2	2 58.1	11 23.8	+ 5 18.8	+1.0350	0.4866	0.2503	+87	+13
k Virginis	5.9	+0.92	− 6.5	− 3 13.8	15 2.7	+ 8 51.8	+0.4140	0.4866	−0.2496	+67	−22
46 Virginis	6.1	0.92	6.4	2 47.3	15 34.8	+ 9 23.2	−0.2061	0.4865	0.2494	+32	−55
48 Virginis	6.7	0.94	6.5	3 5.0	17 27.2	+11 12.6	−0.3478	0.4867	0.2488	+25	−63
θ Virginis	4.6	0.97	7.2	4 57.8	20 51.5	− 9 28.6	+0.8839	0.4868	0.2480	+85	+ 4
l^2 Virginis	5.1	1.08	7.8	5 42.0	2 9 15.7	+ 2 35.6	−1.3500	0.4883	0.2431	−43	−84
m Virginis	5.4	+1.13	− 8.8	− 8 9.6	14 38.3	+ 7 49.6	+0.0681	0.4904	−0.2405	+45	−40
B. A. C. 4591	6.0	1.16	9.2	9 10.1	17 44.6	+10 50.8	+0.4388	0.4911	0.2389	+66	−20
W. xiii, 825	6.8	1.21	9.2	9 1.9	22 30.0	− 8 31.6	−0.8390	0.4925	0.2359	− 3	−90
URANUS				11 42.7	3 3 55.5	− 3 15.1	+0.8557	0.4951	0.2324	+78	+ 3
λ Virginis	4.7	1.34	10.5	12 52.5	11 12.3	+ 3 49.6	+0.4699	0.4977	0.2267	+66	−19
5 Libræ	6.6	+1.52	−11.1	−15 0.4	4 1 30.2	− 6 16.9	−0.3200	0.5055	−0.2130	+21	−62
α^1 Libræ	6.3	1.53	11.3	15 33.0	3 58.4	− 3 53.0	−0.2445	0.5066	0.2103	+24	−57
α^2 Libræ	2.9	1.53	11.3	15 35.7	4 4.4	− 3 47.2	−0.2151	0.5069	0.2101	+16	−55
28 Libræ	6.0	1.72	11.5	17 46.0	19 25.7	+11 6.8	−0.9093	0.5170	0.1916	−14	−90
B. A. C. 5109	6.2	1.78	11.7	19 18.2	5 1 15.2	− 7 14.4	−0.3112	0.5207	0.1831	+17	−62
41 Libræ	5.9	+1.82	−11.5	−18 56.9	4 21.7	− 4 13.7	−1.2620	0.5232	−0.1783	−45	−86
κ Libræ	5.1	1.85	11.6	19 19.8	5 51.1	− 2 47.0	−1.1060	0.5243	0.1760	−30	−90
δ Scorpii	2.6	1.97	11.8	22 18.9	14 41.0	+ 5 46.1	+0.6728	0.5310	0.1615	+66	− 6
19 Scorpii	5.1	2.09	11.4	23 54.6	6 0 13.5	− 9 0.0	+0.9543	0.5380	0.1440	+66	+13
ρ Ophiuchi *mult.*	5.0	2.11	11.2	23 12.0	2 32.2	− 6 45.9	−0.1489	0.5396	0.1395	+20	−52
25 Scorpii	6.5	+2.24	−10.7	−25 20.0	12 12.6	+ 2 34.9	+0.9143	0.5470	−0.1199	+65	+10
18 Ophiuchi	6.7	2.25	10.4	24 27.1	13 31.6	+ 3 51.2	−0.1973	0.5481	0.1169	+15	−55
B. A. C. 5709	6.3	2.30	10.0	24 55.7	18 5.1	+ 8 15.3	−0.1915	0.5513	0.1070	+14	−55
26 Ophiuchi	6.1	2.30	10.1	24 49.5	18 10.4	+ 8 20.4	−0.3126	0.5513	0.1068	+ 8	−62
A Ophiuchi	4.7	2.39	9.5	26 26.8	7 0 52.2	− 9 11.9	+0.7798	0.5556	0.0912	+64	+ 2
38 Ophiuchi	6.7	+2.39	− 9.4	−26 30.7	1 50.9	− 8 15.2	+0.7617	0.5563	−0.0890	+64	+ 1
θ Ophiuchi	3.3	2.40	8.8	24 53.6	3 47.0	− 6 23.3	−1.1550	0.5575	0.0842	−46	−90
3 Sagittarii *mult.*	5.0	2.53	7.8	27 47.4	14 42.7	+ 4 8.7	+1.1930	0.5637	0.0571	+62	+38
B. A. C. 6194	5.1	2.62	5.7	27 4.8	8 3 34.6	− 7 27.7	−0.0873	0.5697	−0.0230	+12	−48
φ Sagittarii	3.7	2.68	3.9	27 6.1	15 2.3	+ 3 34.3	−0.1453	0.5729	+0.0085	+ 7	−52
σ Sagittarii	2.3	+2.69	− 3.2	−26 25.9	19 1.3	+ 7 24.3	−0.8000	0.5735	+0.0195	−27	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
τ Sagittarii	3.6	+2.72	− 2.3	−27 49.7	8 23 48.3	−11 59.6	+0.8073	0.5741	+0.0332	+62	+ 4
B. A. C. 6666	5.8	2.73	− 0.7	27 12.2	9 9 14.8	− 2 54.5	+0.5806	0.5744	0.0593	+53	−10
ω Sagittarii	5.1	2.71	+ 1.2	26 35.0	19 57.4	+ 7 23.9	+0.7183	0.5733	0.0887	+63	− 2
A Sagittarii	5.3	2.70	1.4	26 29.2	21 15.4	+ 8 38.9	+0.7338	0.5732	0.0920	+64	− 1
χ Capricorni	5.4	2.50	6.1	21 37.4	11 2 36.1	−11 5.6	−0.5455	0.5726	0.1647	+ 2	−80
27 Capricorni	6.5	+2.51	+ 6.2	−20 59.2	3 1.9	−10 40.7	−1.1350	0.5623	+0.1655	−35	−90
φ Capricorni	5.5	2.46	6.5	21 5.8	5 39.0	− 8 9.3	−0.5794	0.5611	0.1714	+ 1	−83
33 Capricorni	5.7	2.44	7.0	21 18.4	9 20.3	− 4 35.9	+0.2850	0.5597	0.1792	+46	−27
35 Capricorni	6.2	2.44	7.2	21 39.7	10 10.4	− 3 18.7	+0.8948	0.5588	0.1821	+68	+ 7
MARS				21 16.3	12 20.1	− 1 42.6	+0.8004	0.5637	0.1898	+69	+ 1
37 Capricorni	6.0	+2.40	+ 7.6	−20 33.7	14 0.4	− 0 5.8	+0.3726	0.5571	+0.1886	+52	−23
ε Capricorni	4.7	2.38	7.7	19 56.8	14 59.2	+ 0 50.9	−0.0776	0.5564	0.1905	+28	−48
κ Capricorni	5.0	2.36	8.0	19 21.4	17 26.0	+ 3 12.5	−0.2171	0.5552	0.1954	+22	−56
B. A. C. 7550	6.3	2.36	8.1	20 6.6	17 40.7	+ 3 26.7	+0.6099	0.5551	0.1957	+66	−10
29 Aquarii *mult.*	6.5	2.25	8.9	17 28.9	12 2 13.6	+11 41.7	−0.3624	0.5508	0.2110	+16	−65
56 Aquarii	6.3	+2.09	+ 9.9	−15 8.0	14 49.8	− 0 8.1	+0.0120	0.5444	+0.2308	+38	−43
τ^2 Aquarii	4.1	2.00	10.7	14 9.5	23 42.9	+ 8 27.1	+1.1140	0.5406	0.2423	+76	+20
74 Aquarii	6.0	1.97	10.4	12 11.2	13 1 31.5	+10 12.1	−0.4661	0.5399	0.2446	+15	−72
ψ^1 Aquarii	4.1	1.82	10.7	9 40.4	11 59.4	− 3 40.7	−0.4173	0.5359	0.2555	+19	−69
ψ^2 Aquarii	4.2	1.80	10.9	9 46.1	12 57.3	− 2 44.7	−0.0732	0.5356	0.2561	+37	−47
ψ^3 Aquarii	4.8	+1.80	+11.0	−10 11.9	13 27.0	− 2 15.9	+0.4938	0.5355	+0.2567	+69	−18
B. A. C. 8274	7.0	1.63	11.3	6 58.7	14 3 29.4	+11 19.1	+0.8863	0.5316	0.2670	+83	+ 4
27 Piscium	5.1	1.54	10.8	4 9.1	8 19.8	− 7 59.8	−0.6937	0.5309	0.2693	+ 7	−90
29 Piscium	5.0	1.52	10.8	3 37.5	9 50.0	− 4 32.6	−0.8241	0.5306	0.2699	0	−90
4 Ceti	6.0	1.50	10.7	3 8.8	12 39.6	− 3 48.4	−0.5475	0.5303	0.2709	+15	−77
5 Ceti	6.0	+1.49	+10.7	− 3 2.8	12 53.2	− 3 35.3	−0.5864	0.5303	+0.2711	+13	−80
B. A. C. 5	5.7	1.48	10.6	2 49.3	13 7.8	− 3 21.1	−0.7492	0.5303	0.2711	+ 4	−90
10 Ceti	6.2	1.38	10.5	0 38.8	21 42.2	+ 4 56.8	−0.6247	0.5303	0.2732	+11	−83
14 Ceti	6.0	1.33	10.8	1 5.8	15 1 58.6	+ 9 5.0	+1.0020	0.5303	0.2735	+89	+11
15 Ceti	6.8	1.32	10.9	− 1 5.7	3 11.8	+10 15.8	+1.3320	0.5303	0.2735	+89	+38
77 Piscium	5.9	+1.15	+ 9.7	+ 4 20.1	16 24.6	− 0 56.9	−0.5694	0.5319	+0.2716	+14	−77
e Piscium	5.5	1.14	9.5	5 4.8	17 38.0	+ 0 14.1	−0.9933	0.5321	0.2713	−10	−85
B. A. C. 410	6.0	1.06	9.2	6 50.9	16 0 29.6	+ 6 52.4	−0.9317	0.5339	0.2684	− 7	−83
96 Piscium	6.6	1.02	9.3	6 44.3	3 22.5	+ 9 39.6	−0.0489	0.5344	0.2671	+41	−44
μ Piscium	5.0	1.02	9.7	5 35.3	3 53.8	+10 9.9	+1.2540	0.5348	0.2667	+90	+32
JUPITER				+ 7 57.1	6 18.0	+12 29.3	−0.4996	0.5322	+0.2641	+18	−70
o Piscium	4.4	+0.93	+ 9.0	8 36.9	10 59.4	− 6 58.5	+0.0675	0.5374	0.2619	+47	−38
54 Ceti	5.5	0.90	8.4	10 13.6	13 31.0	− 4 31.9	−1.1910	0.5384	0.2601	−25	−79
29 Arietis	6.3	0.69	7.6	14 33.5	17 8 35.4	−10 6.3	−0.5040	0.5486	0.2399	+17	−66
o Arietis	6.0	0.63	7.3	14 51.3	13 45.3	− 5 7.1	+0.4180	0.5513	0.2330	+68	−16
ρ^1 Arietis	7.0	+0.58	+ 7.0	+17 17.8	18 16.5	− 0 45.5	−1.0150	0.5542	+0.2262	−14	−73
ρ^3 Arietis	6.0	0.58	6.9	17 35.7	18 55.2	− 0 8.1	−1.1690	0.5549	0.2253	−26	−72
53 Arietis	6.3	0.53	7.0	17 27.8	23 42.8	+ 4 29.3	+0.0236	0.5580	0.2176	+44	−34
54 Arietis	6.3	0.52	6.8	18 22.9	18 0 5.3	+ 4 51.0	−0.8237	0.5581	0.2169	− 2	−72
13 Tauri	5.7	0.38	6.7	19 21.2	14 28.2	− 5 17.7	+1.1230	0.5679	0.1895	+90	+32
B. A. C. 1143	6.0	+0.37	+ 6.4	+20 35.3	15 20.8	− 4 27.0	+0.0371	0.5699	+0.1875	+45	−30
B. A. C. 1189	6.0	0.35	6.0	21 55.0	17 35.0	− 2 17.9	−0.8932	0.5701	0.1830	− 8	−68
32 Tauri	6.0	0.32	6.0	22 10.0	20 26.5	+ 0 27.2	−0.6333	0.5720	0.1766	+ 8	−65
B. A. C. 1238	6.3	0.30	5.8	22 53.8	22 6.4	+ 2 3.4	−1.0810	0.5729	0.1731	−22	−67
A^1 Tauri	4.7	0.29	6.1	21 47.2	23 39.3	+ 3 32.7	+0.3091	0.5742	0.1694	+62	−14
A^2 Tauri	6.3	+0.29	+ 6.2	+21 43.1	23 54.8	+ 3 47.7	+0.4224	0.5744	+0.1690	+70	−17
62 Tauri	6.0	0.22	5.7	24 3.0	19 7 25.8	+11 1.3	−0.7422	0.5792	0.1507	+ 1	−66
υ^1 Tauri	4.7	0.21	6.1	22 34.1	8 22.8	+11 56.2	+0.9031	0.5794	0.1484	+90	+21
υ^2 Tauri	6.0	0.21	6.1	22 45.1	8 46.6	−11 40.9	+0.7762	0.5797	0.1473	+90	+13
95 Tauri	6.3	0.16	5.9	23 53.1	15 6.0	− 5 36.4	+0.5079	0.5833	0.1309	+77	0
k Tauri	6.0	+0.12	+ 5.8	+24 53.0	20 57.7	+ 0 1.5	+0.2133	0.5857	+0.1148	+56	−13

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	'	° '	d h m	h m				°	°
125 Tauri	6.0	+0.02	+ 5.1	+25 50.2	20 13 4.7	- 8 30.4	+0.7241	0.5923	+0.0680	+90	+18
136 Tauri	5.3	-0.01	5.3	27 35.2	18 16.2	- 3 31.6	-0.7526	0.5936	0.0523	- 1	-63
139 Tauri	5.3	0.02	5.8	25 56.4	20 5.7	- 1 46.6	+1.0210	0.5936	0.0468	+90	+38
49 Aurigæ	5.7	0.07	5.7	28 6.3	21 10 19.7	+11 52.7	-0.8443	0.5934	+0.0003	- 7	-62
54 Aurigæ	6.0	0.07	5.8	28 21.4	11 59.9	-10 31.1	-1.1040	0.5930	-0.0026	-28	-62
25 Geminorum	6.5	-0.08	+ 5.8	+28 17.8	12 41.3	- 9 51.4	-1.0440	0.5930	-0.0049	-22	-62
				NEW	*MOON.*						
η Leonis	3.3	+0.10	4.0	17 17.3	25 3 36.0	+ 1 50.6	+0.0337	0.5321	0.2091	+45	-33
42 Leonis	6.0	0.13	3.5	15 31.2	10 38.7	+ 8 39.9	+0.4168	0.5261	0.2180	+68	-16
i Leonis	5.7	+0.16	+ 3.2	+14 41.5	15 45.6	-10 22.8	+0.1750	0.5211	-0.2238	+54	-29
ν Virginis	4.0	0.38	- 0.2	7 8.1	27 6 13.9	+ 2 58.0	-0.8692	0.4983	0.2501	- 3	-83
b Virginis	5.8	0.41	1.2	4 15.4	13 56.5	+10 27.7	+0.3347	0.4948	0.2520	+62	-25
10 Virginis	6.4	0.44	2.0	+ 2 30.1	19 18.8	- 8 18.9	+0.8945	0.4930	0.2530	+90	+ 4
γ Virginis *mean*	3.1	0.57	3.9	- 0 51.6	28 13 12.0	+ 9 5.3	+0.0513	0.4891	0.2528	+46	-40
38 Virginis	6.2	+0.61	- 4.8	- 2 58.1	19 39.0	- 8 38.2	+0.7449	0.4884	-0.2517	+87	- 5
k Virginis	5.9	0.64	5.1	3 13.8	23 16.7	- 5 6.3	+0.1267	0.4882	0.2508	+50	-37
46 Virginis	6.1	0.65	4.9	2 47.3	23 48.6	- 4 35.2	-0.4994	0.4881	0.2506	+17	-73
48 Virginis	6.7	0.67	5.1	3 5.0	29 1 40.2	- 2 46.6	-0.6393	0.4882	0.2502	+10	-85
θ Virginis	4.6	0.69	5.7	4 57.8	5 3.5	+ 0 31.2	+0.5880	0.4882	0.2490	+79	-13
m Virginis	5.4	+0.86	- 7.4	- 8 9.5	22 46.2	- 6 14.7	-0.2266	0.4906	-0.2407	+30	-56
B. A. C. 4591	6.0	0.89	7.8	9 10.1	30 1 52.1	- 3 13.9	+0.1437	0.4915	0.2391	+49	-36
W. xiii, 825	6.8	0.93	7.9	9 1.9	6 37.0	+ 1 23.2	-1.1350	0.4923	0.2359	-23	-90
Uranus				11 47.3	12 25.0	+ 7 1.6	+0.5604	0.4933	0.2314	+72	-14
λ Virginis	4.7	1.07	9.4	12 52.5	19 19.4	-10 15.5	+0.1825	0.4969	0.2257	+49	-33
5 Libræ	6.6	+1.23	-10.2	-15 0.4	31 9 38.7	+ 3 39.4	-0.6002	0.5037	-0.2117	+ 7	-83
a^1 Libræ	6.3	1.27	10.4	15 33.0	12 7.4	+ 6 3.8	-0.5192	0.5053	0.2089	+10	-76
a^2 Libræ	2.9	1.27	10.4	15 35.7	12 13.5	+ 6 9.7	-0.4916	0.5055	0.2089	+12	-74
ι^2 Libræ	6.5	+1.42	-11.6	-19 14.5	23 46.2	- 6 38.0	+1.1980	0.5119	-0.1947	+71	+30

AUGUST.

Name.	Mag.	Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
28 Libræ	6.0	+1.47	-11.0	-17 46.0	1 3 38.5	- 2 52.8	-1.1720	0.5146	-0.1896	-34	-90
B. A. C. 5109	6.2	1.55	11.2	19 18.2	9 29.7	+ 2 47.9	-0.5630	0.5183	0.1855	+ 5	-81
δ Scorpii	2.6	+1.74	-11.8	-22 18.9	23 0.0	- 8 7.1	+0.4403	0.5279	-0.1595	+54	-19
19 Scorpii	5.1	1.89	11.7	23 54.6	2 8 35.8	+ 1 10.1	+0.7374	0.5350	0.1420	+66	- 2
ρ Ophiuchi *mult.*	5.0	1.92	11.3	23 12.0	10 55.4	+ 3 25.1	-0.3658	0.5367	0.1376	+ 9	-66
22 Scorpii	5.5	1.96	11.7	24 52.7	13 1.9	+ 5 27.4	+1.1820	0.5383	0.1332	+65	+33
25 Scorpii	6.5	2.08	11.2	25 20.0	20 39.1	-11 10.7	+0.7161	0.5441	0.1177	+65	- 3
18 Ophiuchi	6.7	+2.09	-10.9	-24 27.1	21 58.6	- 9 54.0	-0.3951	0.5448	-0.1149	+ 5	-68
B. A. C. 5709	6.3	2.17	10.6	24 55.7	3 2 33.6	- 5 28.3	-0.3799	0.5483	0.1049	+ 5	-67
26 Ophiuchi	6.1	2.17	10.5	24 49.5	2 38.9	- 5 23.2	-0.5009	0.5484	0.1046	- 2	-78
A Ophiuchi	4.7	2.28	9.9	26 26 8	9 22.8	+ 1 6.6	+0.6024	0.5529	0 0891	+57	- 9
38 Ophiuchi	6.7	2.30	9.8	26 30.7	10 21.7	+ 2 3.6	+0.5805	0.5537	0.0869	+56	-10
3 Sagittarii *mult.*	5.0	+2.49	- 8.9	-27 47.4	23 16.5	- 9 29.6	+1.0420	0.5615	-0.0550	+62	+22
B. A. C. 6194	5.1	2.65	6.8	27 4.8	4 12 10.0	+ 2 55.5	-0.2118	0.5680	-0.0208	+ 5	-56
φ Sagittarii	3.7	2.77	5.0	27 6.1	23 37.5	-10 2.7	-0.2442	0.5682	+0.0106	+ 3	-58
σ Sagittarii	2.3	2.79	4.1	26 25.9	5 3 36.1	- 6 13.1	-0.8900	0.5731	0.0219	-32	-90
τ Sagittarii	3.6	2.86	3.5	27 49.7	8 22.3	- 1 37.7	+0.7240	0.5740	0.0352	+62	- 1
B. A. C. 6666	5.8	+2.93	- 1.6	-27 12.2	17 46.4	+ 7 24.9	+0.5186	0.5750	+0.0617	+49	-14
ω Sagittarii	5.1	2.98	+ 0.6	26 35.0	6 4 24.8	- 6 20.9	+0.6779	0.5746	0.0910	+62	- 5
A Sagittarii	5.3	2.99	0.8	26 29.2	5 42.2	- 5 6.5	+0.6968	0.5745	0.0948	+63	- 4
χ Capricorni	5.4	2.94	6.7	21 37.4	7 10 42.3	- 1 11.8	-0.5032	0.5667	0.1684	+ 4	-76
27 Capricorni	6.5	2.93	6.8	20 59.2	11 7.5	- 0 47.4	-1.0870	0.5667	0.1692	-31	-90
φ Capricorni	5.5	+2.91	+ 7.3	-21 5.8	13 42.4	+ 1 41.9	-0.5284	0.5654	+0.1750	+ 5	-79

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0. Δα	Red'ns from 1892.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	"	° '	d h m	h m				°	°
33 Capricorni	5.7	+2.91	+ 7.9	-21 18.4	7 17 19.9	+ 5 11.4	+0.3374	0.5640	+0.1829	+49	-25
35 Capricorni	6.2	2.90	8.1	21 39.7	18 38.9	+ 6 27.6	+0.9452	0.5635	0.1860	+68	+10
37 Capricorni	6.0	2.88	8.7	20 33.7	21 55.4	+ 9 36.9	+0.4359	0.5619	0.1926	+56	-20
ε Capricorni	4.7	2.87	8.9	19 56.8	22 53.2	+10 32.7	-0.0183	0.5618	0.1948	+32	-44
κ Capricorni	5.0	2.85	9.3	19 21.4	8 1 17.5	-11 8.2	-0.1383	0.5606	0.1996	+26	-51
B A.C.7550	6.3	+2.86	+ 9.3	-20 6.6	1 31.9	-10 54.4	+0.6811	0.5606	+0.1999	+69	- 6
29 Aquarii *mult.*	6.5	2.78	10.6	17 28.9	9 55.1	- 2 49.1	-0.2620	0.5564	0.2158	+22	-58
56 Aquarii	6.3	2.68	12.3	15 8.0	22 16.0	+ 9 5.8	+0.1373	0.5511	0.2359	+45	-36
τ² Aquarii	4.1	2.62	13.4	14 9.5	9 6 57.7	- 6 30.5	+1.2500	0.5470	0.2477	+76	+32
74 Aquarii	6.0	2.57	13.4	12 11.2	8 44.0	- 4 47.8	-0.2075	0.5463	0.2500	+24	-61
ψ¹ Aquarii	4.1	+2.48	+14.2	- 9 40.4	18 57.9	+ 5 5.4	-0.2376	0.5428	+0.2607	+29	-56
ψ² Aquarii	4.2	2.47	14.3	9 46.1	19 54.7	+ 6 0.3	+0.1061	0.5424	0.2616	+46	-37
ψ³ Aquarii	4.8	2.47	14.6	10 11.9	20 23.8	+ 6 28.4	+0.6671	0.5423	0.2620	+79	- 8
B. A. C. 8274	7.0	2.33	15.2	6 58.7	10 10 7.5	- 4 15.3	+1.0850	0.5380	0.2719	+83	+16
27 Piscium	5.1	2.26	15.1	4 9.1	14 51.7	+ 0 19.6	-0.4701	0.5370	0.2743	+19	-71
29 Piscium	5.0	+2.25	+15.1	- 3 37.5	16 20.1	+ 1 45.1	-0.5975	0.5367	+0.2747	+12	-81
4 Ceti	6.0	2.23	15.2	3 8.8	19 6.2	+ 4 25.7	-0.3172	0.5365	0.2757	+26	-61
5 Ceti	6.0	2.22	15.2	3 2.8	19 19.4	+ 4 38.4	-0.3575	0.5363	0.2757	+25	-63
B. A. C. 5	5.7	2.22	15.2	2 49.3	19 33.7	+ 4 52.3	-0.5186	0.5363	0.2759	+16	-75
10 Ceti	6.2	2.14	15.2	0 38.7	11 3 57.7	-11 0.3	-0.3823	0.5355	0.2776	+24	-65
14 Ceti	6.0	+2.10	+15.5	- 1 5.7	8 9.1	- 6 57.1	+1.2320	0.5352	+0.2777	+89	+28
73 Piscium	5.9	1.94	14.3	+ 5 4.8	21 53.3	+ 6 20.1	-1.1770	0.5363	0.2756	-23	-85
77 Piscium	5.9	1.94	14.7	4 20.2	22 20.1	+ 6 46.1	-0.3068	0.5363	0.2750	+27	-60
ε Piscium	5.5	1.94	14.6	5 4.9	23 32.2	+ 7 55.7	-0.7243	0.5364	0.2743	+ 6	-85
88 Piscium	6.2	1.90	14.3	6 25.7	12 2 28.2	+10 45.9	-1.2770	0.5368	0.2732	-32	-84
B. A. C. 410	6.0	+1.87	+14.3	+ 6 51.0	6 17.8	- 9 32.0	-0.6606	0.5375	+0.2711	+ 9	-82
96 Piscium	6.6	1.84	14.4	6 44.4	9 8.4	- 6 47.1	+0.2180	0.5381	0.2694	+55	-30
JUPITER				8 18.3	14 17.5	- 1 48.3	+0.0235	0.5395	0.2661	+44	-40
ο Piscium	4.4	1.76	14.0	8 37.0	16 39.7	+ 0 29.2	+0.3357	0.5406	0.2638	+62	-24
54 Ceti	5.5	1.74	13.5	10 30.7	19 9.8	+ 2 54.3	-0.9133	0.5411	0.2616	- 6	-79
B. A. C. 609	6.0	+1.70	+13.1	11 46.5	23 3.6	+ 6 40.2	-1.1760	0.5426	+0.2580	-24	-78
29 Arietis	6.3	1.56	12.3	14 33.5	13 14 6.1	- 2 48.2	-0.2290	0.5491	0.2404	+31	-50
ο Arietis	6.0	1.51	12.2	14 51.3	19 15.1	+ 2 10.0	+0.6907	0.5516	0.2329	+92	- 2
π Arietis	5.7	1.49	11.4	17 1.0	21 18.5	+ 4 9.1	-1.0180	0.5526	0.2299	-14	-73
ρ¹ Arietis	7.0	1.46	11.3	17 17.8	23 46.0	+ 6 31.4	-0.7418	0.5540	0.2259	+ 3	-73
ρ³ Arietis	6.0	+1.46	+11.2	+17 35.7	14 0 24.5	+ 7 8.6	-0.9003	0.5543	+0.2248	- 6	-72
53 Arietis	6.3	1.41	11.2	17 27.8	5 11.8	+11 45.7	+0.2902	0.5567	0.2167	+60	-20
54 Arietis	6.3	1.41	10.9	18 22.9	5 34.7	-11 52.3	-0.5551	0.5569	0.2160	+13	-66
δ Arietis	4.5	1.40	10.6	19 19.2	6 58.3	-10 31.7	-1.2070	0.5580	0.2136	+38	-71
65 Arietis	6.0	1.34	10.0	20 25.3	12 26.7	- 5 15.1	-1.1850	0.5610	0.2033	-29	-70
B. A. C. 1143	6.0	+1.26	+ 9.8	+20 35.4	20 53.8	+ 2 53.3	+0.2912	0.5657	+0.1861	+60	-16
B. A C. 1189	6.0	1.24	9.3	21 55.1	23 8.9	+ 5 3.4	-0.6471	0.5669	0.1813	+ 8	-66
32 Tauri	6.0	1.21	9.2	22 10.1	15 2 1.8	+ 7 49.9	-0.3865	0.5684	0.1746	+22	-51
33 Tauri	6.3	1.21	9.0	22 51.8	2 6.3	+ 7 54.2	-1.0790	0.5684	0.1748	-21	-67
B. A. C. 1238	6.3	1.20	8.9	22 53.9	3 42.4	+ 9 26.8	-0.8392	0.5696	0.1708	- 4	-67
A¹ Tauri	4.7	+1.18	+ 9.2	+21 47.3	5 16.2	+10 57.0	+0.5529	0.5701	+0.1674	+80	- 1
A² Tauri	6.3	1.18	9.2	21 43.2	5 31.8	+11 12.1	+0.6677	0.5702	0.1665	+90	+ 5
62 Tauri	6.0	1.11	8.3	24 3.1	13 7.4	- 5 29.7	-0.5099	0.5745	0.1486	+15	-55
υ¹ Tauri	4.7	1.10	8.7	22 34.2	14 5.1	- 4 34.1	+1.1420	0.5751	0.1461	+90	+38
υ² Tauri	6.0	1.10	8.7	22 45.2	14 29.1	- 4 11.1	+1.0140	0.5753	0.1451	+90	+28
95 Tauri	6.3	+1.04	+ 8.2	+23 53.2	20 53.2	+ 1 58.2	+0.7340	0.5784	+0.1286	+90	+12
k Tauri	6.0	0.98	7.5	24 53.0	16 2 49.7	+ 7 40.9	+0.4315	0.5806	0.1124	+71	- 2
125 Tauri	6.0	0.83	6.7	25 50.2	19 12.5	- 0 35.2	+0.9185	0.5857	0.0656	+90	+30
136 Tauri	5.0	0.78	6.0	27 35.2	17 0 29.6	+ 4 29.3	-0.5766	0.5864	0.0500	+10	-52
49 Aurigæ	5.7	0.65	5.2	28 6.3	16 51.4	- 3 48.1	-0.7004	0.5861	+0.0007	+ 3	-59
54 Aurigæ	6.0	+0.64	+ 5.1	+28 21.4	18 33.5	- 2 10.0	-0.9649	0.5860	-0.0045	-15	-62

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
25 Geminorum	6.5	+0.63	+ 5.1	+28 17.8	**17** 19 16.0	− 1 29.2	−0.9082	0.5860	−0.0066	−11	−62
39 Geminorum	6.3	0.58	5.3	26 13.3	**18** 2 11.2	+ 5 9.5	+1.1280	0.5842	0.0274	+90	+18
47 Geminorum	6.0	0.54	4.9	27 2.0	7 9.4	+ 9 56.0	+0.1144	0.5822	0.0419	+50	−12
53 Geminorum	6.3	0.54	4.7	28 5.1	8 57.3	+11 39.7	−1.0620	0.5821	0.0470	−23	−62
59 Geminorum	6.9	0.51	4.6	27 50.8	12 23.9	− 9 1.8	−0.9886	0.5808	0.0570	−18	−62
υ Geminorum	4.3	+0.48	+ 4.6	+27 8.1	16 59.4	− 4 37.0	−0.5405	0.5785	−0.0699	+12	−51
c Geminorum	6.0	0.46	4.6	26 2.4	20 19.8	− 1 24.3	+0.3498	0.5763	0.0794	+65	− 3
φ Geminorum	5.0	0.44	4.3	27 2.7	**19** 0 8.5	+ 2 15.7	−1.0230	0.5748	0.0894	−19	−63
ω^1 Cancri	6.0	0.42	4.4	25 41.3	3 13.3	+ 5 13.5	+0.1081	0.5725	0.0977	+50	−17
ω^2 Cancri	6.3	0.42	4.5	25 23.2	3 33.5	+ 5 32.9	+0.3910	0.5724	0.0985	+68	− 3
ψ^1 Cancri	6.8	+0.40	+ 4.2	+26 9.7	7 3.8	+ 8 55.3	−0.7829	0.5702	−0.1075	− 2	−64
ψ^2 Cancri	5.7	0.40	4.3	25 50.0	7 10.2	+ 9 1.5	−0.4509	0.5699	0.1078	+18	−49
λ Cancri	5.7	0.38	4.4	24 21.7	11 24.9	−10 53.3	+0.6145	0.5675	0.1187	+88	+ 7
υ^1 Cancri *mult.*	6.0	0.36	4.2	24 53.4	13 59.6	− 8 24.4	−0.2541	0.5656	0.1248	+29	−38
υ^2 Cancri	5.8	0.36	4.2	24 30.2	14 49.5	− 7 36.2	+0.0473	0.5649	0.1268	+46	−23
υ^3 Cancri	6.0	+0.36	+ 4.1	+24 26.7	16 3.7	− 6 24.7	−0.0508	0.5641	−0.1297	+40	−29
υ^4 Cancri	5.7	0.35	4.1	24 27.1	16 41.8	− 5 48.0	−0.1400	0.5639	0.1312	+35	−34
ξ Cancri	5.0	0.30	3.7	22 28.9	**20** 8 34.8	+ 9 31.1	−0.4270	0.5512	0.1657	+20	−53
				NEW	*MOON.*						
ν Virginis	4.0	+0.28	+ 0.1	+ 7 8.1	**23** 14 21.7	−11 6.4	−1.0440	0.4991	−0.2525	−14	−83
b Virginis	5.8	0.29	− 0.9	4 15.4	22 3.7	− 3 37.3	+0.1402	0.4961	0.2547	+51	−36
10 Virginis	6.4	0.29	1.4	+ 2 30.2	**24** 3 25.4	+ 1 35.5	+0.6910	0.4944	0.2557	+90	− 7
γ^1 Virginis	3.1	0.37	2.9	− 0 51.6	21 15.5	− 5 3.5	−0.1832	0.4905	0.2555	+34	−53
38 Virginis	6.2	0.41	3.7	2 58.1	**25** 3 41.3	+ 1 11.9	+0.4973	0.4901	0.2542	+73	−18
k Virginis	5.9	+0.40	− 3.9	− 3 13.8	7 18.2	+ 4 43.0	−0.1300	0.4897	−0.2530	+36	−50
46 Virginis	6.1	0.41	3.8	2 47.3	7 50.1	+ 5 14.1	−0.7513	0.4898	0.2530	+ 4	−90
48 Virginis	6.7	0.41	4.0	3 5.0	9 41.3	+ 7 2.3	−0.8948	0.4897	0.2524	− 4	−90
θ Virginis	4.6	0.43	4.6	4 57.8	13 4.0	+10 19.4	+0.3273	0.4899	0.2511	+61	−26
m Virginis	5.4	0.55	6.1	8 9.6	**26** 6 44.0	+ 3 30.8	−0.5067	0.4916	0.2423	+16	−74
B. A. C. 4591	6.0	+0.57	− 6.4	− 9 10.1	9 49.6	+ 6 31.3	−0.1383	0.4922	−0.2403	+34	−51
URANUS				12 4.8	22 3.2	− 5 35.3	+0.2012	0.4914	0.2307	+51	−33
λ Virginis	4.7	0.72	8.0	12 52.5	**27** 3 16.2	− 0 31.0	−0.1127	0.4972	0.2266	+33	−50
5 Libræ	6.6	0.86	9.0	15 0.4	17 37.1	−10 34.4	−0.9010	0.5031	0.2119	−11	−90
α^1 Libræ	6.3	0.89	9.2	15 33.0	20 6.1	− 8 9.7	−0.8213	0.5042	0.2091	− 6	−90
α^2 Libræ	2.9	+0.89	− 9.2	−15 35.7	20 12.2	− 8 3.8	−0.7936	0.5044	−0.2089	− 5	−90
B. A. C. 4896	6.6	0.89	9.8	17 20.6	20 32.4	− 7 44.2	+1.0740	0.5046	0.2085	+73	+18
ι^1 Libræ	5.0	1.02	10.7	19 23.1	**28** 7 13.7	+ 2 38.3	+1.1730	0.5099	0.1951	+71	+27
ι^2 Libræ	6.5	1.02	10.5	19 14.5	7 47.7	+ 3 11.3	+0.9053	0.5105	0.1945	+71	+ 7
B. A. C. 5109	6.2	1.15	10.5	19 18.2	17 34.8	−11 19.2	−0.8598	0.5163	0.1804	−13	−90
δ Scorpii	2.6	+1.34	−11.2	−22 18.9	**29** 7 11.6	+ 1 52.3	+0.1542	0.5247	−0.1582	+38	−35
19 Scorpii	5.1	1.50	11.4	23 54.6	16 53.3	+11 15.4	+0.4596	0.5313	0.1407	+53	−18
ρ Ophiuchi *mult.*	5.0	1.52	11.1	23 12.0	19 14.2	−10 28.3	−0.6457	0.5326	0.1359	− 6	−90
22 Scorpii	5.5	1.57	11.4	24 52.7	21 22.4	− 8 24.2	+0.9103	0.5342	0.1318	+65	+ 9
25 Scorpii	6.5	1.69	11.2	25 20.0	**30** 5 4.7	− 0 57.3	+0.4523	0.5393	0.1160	+50	−18
18 Ophiuchi	6.7	+1.70	−10.9	−24 27.1	6 25.2	+ 0 20.5	−0.6651	0.5404	−0.1130	−10	−90
B. A. C. 5709	6.3	1.78	10.7	24 55.7	11 3.7	+ 4 49.6	−0.6459	0.5433	0.1030	−10	−90
26 Ophiuchi	6.1	1.78	10.6	24 49.5	11 9.0	+ 4 54.7	−0.7678	0.5433	0.1030	−16	−90
Λ Ophiuchi	4.7	1.91	10.6	26 26.8	17 58.3	+11 29.9	+0.3521	0.5479	0.0875	+41	−24
38 Ophiuchi	6.7	1.93	10.6	26 30.7	18 57.9	−11 32.5	+0.3355	0.5481	0.0851	+40	−24
3 Sagittarii *var.*	5.0	+2.15	− 9.7	−27 47.4	**31** 3 8.3	+ 1 5.2	+0.8112	0.5559	−0.0534	+62	+ 4
B. A. C. 6127	5.1	2.29	8.9	28 28.1	16 51.5	+ 9 34.4	+1.1700	0.5604	0.0307	+62	+35
B. A. C. 6194	5.1	+2.35	− 7.8	−27 4.8	21 7.7	−10 18.8	−0.4316	0.5624	−0.0200	− 6	−72

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
φ Sagittarii	3.7	+2.53	- 6.2	-27 6.1	1 8 44.6	+ 0 52.4	-0.4483	0.5666	+0.0121	- 8	-73
σ Sagittarii	2.3	2.56	5.4	26 25.9	12 46.3	+ 4 45.1	-1.0900	0.5678	0.0231	-45	-90
τ Sagittarii	3.6	2.67	5.0	27 49.7	17 36.2	+ 9 24.2	+0.5416	0.5689	0.0366	+49	-12
B. A. C. 6628	5.9	2 76	3.8	28 4.4	2 0 52.6	- 7 35.8	+1.1370	0.5701	0.0568	+62	+31
B. A. C. 6666	5.8	2.77	3.2	27 12.2	3 6.8	- 5 26.7	+0.3502	0.5706	0.0628	+39	-24
ω Sagittarii	5.1	+2.86	- 1.0	-26 35.0	13 51.5	+ 4 53.1	+0.5313	0.5706	+0.0925	+52	-14
A Sagittarii	5.3	2.88	- 0.8	26 29.2	15 9.6	+ 6 8.9	+0.5520	0.5706	0.0959	+54	-12
MARS				24 6.4	3 12 42.5	+ 2 53.5	+0.7558	0.5719	0.1492	+66	- 1
χ Capricorni	5.4	3.00	+ 5.8	21 37.5	20 18.0	+10 12.1	-0.5849	0.5654	0.1702	0	-84
27 Capricorni	6.5	2.99	6.0	20 59.3	20 43.4	+10 36.6	-1.1680	0.5653	0.1712	-38	-90
φ Capricorni	5.5	+3.00	+ 6.4	-21 5.9	23 18.1	-10 54.5	-0.6043	0.5644	+0.1770	0	-85
33 Capricorni	5.7	3.01	7.1	21 18.5	4 2 55.6	- 7 24.8	+0.2682	0.5635	0.1852	+46	-29
35 Capricorni	6.2	3.02	7.3	21 39.8	4 14.3	- 6 9.0	+0.8758	0.5628	0.1881	+68	+ 6
37 Capricorni	6.0	3.02	8.0	20 33.8	7 30.4	- 3 0.1	+0.3766	0.5619	0.1952	+53	-23
ε Capricorni	4.7	3.01	8.3	19 56.8	8 28.0	- 2 4.5	-0.0647	0.5614	0.1972	+29	-47
κ Capricorni	5.0	+3.01	+ 8.8	-19 21.4	10 51.7	+ 0 14.0	-0.1888	0.5608	+0.2021	+24	-54
B. A. C. 7550	6.3	3.02	8.8	20 6.6	11 6.1	+ 0 27.8	+0.6276	0.5607	0.2026	+67	- 9
29 Aquarii *mult.*	6.5	2.98	10.5	17 28.9	19 26.3	+ 8 30.1	-0.2912	0.5577	0.2187	+20	-60
56 Aquarii	6.3	2.95	12.7	15 8.0	5 7 40.5	- 3 41.7	+0.1380	0.5533	0.2395	+45	-36
74 Aquarii	6 0	2.89	14.3	12 11.1	18 0.2	+ 6 16.4	-0.2799	0.5501	0.2542	+25	-59
ψ^1 Aquarii	4.1	+2.85	+15.7	- 9 40.3	6 4 4.1	- 8 0.4	-0.1802	0.5473	+0.2656	+32	-53
ψ^2 Aquarii	4.2	2.84	15.8	9 46.0	4 59.9	- 7 6.6	+0.1601	0.5470	0.2665	+50	-35
ψ^3 Aquarii	4.8	2.85	15.8	10 11.8	5 28.3	- 6 39.1	+0.7188	0.5469	0.2669	+80	- 6
B. A. C. 8274	7.0	2.77	17.2	6 58.6	18 55.1	+ 6 20.2	+1.1640	0.5437	0.2773	+83	+22
27 Piscium	5.1	2.72	17.5	4 9.0	23 32.9	+10 48.7	-0.3599	0.5436	0.2794	+24	-64
29 Piscium	5.0	+2.72	+17.6	- 3 37.4	7 0 59.0	-11 48.2	-0.4808	0.5435	+0.2805	+18	-72
4 Ceti	6.0	2.70	17.8	3 8.7	3 41.1	- 9 11.6	-0.1989	0.5435	0.2817	+33	-54
5 Ceti	6.0	2.71	17.8	3 2.7	3 54.0	- 8 59.1	-0.2368	0.5433	0.2817	+31	-56
B. A. C. 5	5.7	2.70	17.8	2 49.2	4 8.0	- 8 45.6	-0.3960	0.5431	0.2817	+23	-66
10 Ceti	6.2	2.66	18.2	0 38.6	12 19.2	- 0 50.9	-0.2434	0.5429	0.2836	+31	-57
14 Ceti	6.0	+2.65	+18.4	- 1 5.6	16 24.0	+ 3 5.6	+1.3620	0.5431	+0.2839	+89	+41
73 Piscium	5.9	2.56	18.2	+ 5 4.9	8 5 45.2	- 8 0.3	-0.9906	0.5443	0.2813	-10	-85
77 Piscium	5.9	2.55	18.4	4 20.3	6 11.1	- 7 35.2	-0.1306	0.5443	0.2811	+37	-50
ε Piscium	5.5	2.55	18.3	5 5.0	7 21.3	- 6 27.4	-0.5424	0.5445	0.2806	+16	-76
88 Piscium	6.2	2.53	18.2	6 25.8	10 12.3	- 3 42.3	-1.0800	0.5451	0.2794	-15	-84
B. A. C. 410	6.0	+2.50	+18.2	+ 6 51.1	13 55.2	- 0 6.9	-0.4649	0.5462	+0.2771	+20	-69
96 Piscium	6.6	2.49	18.2	6 44.5	16 40.8	+ 2 33.0	+0.4070	0.5464	0.2758	+68	-21
JUPITER				7 47.2	19 49.0	+ 5 34.8	+0.2301	0.5501	0.2753	+56	-30
o Piscium	4.4	2.44	18.0	8 37.1	23 59.1	+ 9 36.2	+0.5348	0.5486	0.2696	+76	-14
54 Ceti	5.5	2.42	17.5	10 30.7	9 2 24.9	+11 56.9	-0.6939	0.5493	0.2673	+ 7	-79
B. A. C. 609	6.0	+2.40	+17.3	+11 46.5	6 11.9	- 8 23.9	-0.9462	0.5507	+0.2635	- 8	-78
29 Arietis	6.3	2.31	16.3	14 33.6	20 49.1	+ 5 42.4	+0.0000	0.5567	0.2448	+44	-38
o Arietis	6.0	2.28	16.1	14 51.4	10 1 49.8	+10 32.3	+0.9118	0.5588	0.2370	+90	+11
ρ^1 Arietis	7.0	2.26	15.3	17 17.9	6 13.6	- 9 13.5	-0.4999	0.5610	0.2295	+17	-63
ρ^2 Arietis	6.0	2.26	15.2	17 53.8	6 35.9	- 8 52.0	-1.0140	0.5611	0.2290	-14	-72
ρ^3 Arietis	6.0	+2.26	+15.2	+17 35.8	6 51.4	- 8 37.0	-0.6548	0.5611	+0.2284	+ 9	-71
53 Arietis	6.3	2.22	15.0	17 27.9	11 31.5	- 4 7.1	+0.5240	0.5635	0.2201	+77	- 8
54 Arietis	6.3	2.22	14.7	18 23.0	11 53.9	- 3 45.6	-0.3137	0.5636	0.2194	+27	-52
δ Arietis	4.5	2.22	14.4	19 19.3	13 15.4	- 2 27.2	-0.9566	0.5641	0.2169	-10	-71
τ^2 Arietis	5.3	2.19	13.8	20 21.6	17 54.3	+ 2 1.5	-1.0140	0.5665	0.2075	-14	-70
65 Arietis	6.0	+2.18	+13.7	+20 25.4	18 36.2	+ 2 41.8	-0.9333	0.5669	+0.2062	- 9	-70
B. A. C. 1143	6.0	2.12	13.2	20 35.5	11 2 52.5	+10 39.5	+0.5283	0.5709	0.1882	+78	- 5
B. A. C. 1189	6.0	2.11	12.6	21 55.1	5 5.0	-11 13.1	-0.3961	0.5720	0.1831	+22	-52
32 Tauri	6.0	2.09	12.3	22 10.1	7 54.6	- 8 29.9	-0.1411	0.5733	0.1765	+34	-38
33 Tauri	6.3	2.09	12.1	22 51.8	7 58.9	- 8 25.8	-0.8285	0.5736	0.1765	- 3	-67
B. A. C. 1238	6.3	+2.08	+11.9	+22 53.9	9 33.3	- 6 54.9	-0.5903	0.5741	+0.1729	+12	-62

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0. Δα	Red'ns from 1892.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	″	° ′	d h m	h m				°	°
A^1 Tauri	4.7	+2.06	+12.2	+21 47.3	11 11 5.4	− 5 26.4	+0.7927	0.5748	+0.1690	+90	+12
A^2 Tauri	6.3	2.06	12.2	21 43.2	11 20.8	− 5 11.5	+0.9036	0.5748	0.1683	+90	+19
62 Tauri	6.0	2.01	10.9	24 3.1	18 49.1	+ 1 59.4	−0.2650	0.5782	0.1492	+29	−41
95 Tauri	6.3	1.94	10.3	23 53.2	12 2 28.5	+ 9 20.9	+0.9685	0.5811	0.1289	+90	+27
k Tauri	6.0	1.89	9.3	24 53.1	8 21.1	− 9 0.4	+0.6636	0.5826	0.1124	+90	+10
125 Tauri	6.0	+1.73	+ 7.6	+25 50.2	13 0 36.8	+ 6 36.5	+1.1440	0.5859	+0.0650	+90	+46
136 Tauri	5.3	1.69	6.5	27 35.2	5 52.9	+11 39.9	−0.3496	0.5869	+0.0492	+24	−37
49 Aurigæ	5.7	1.52	4.8	28 6.3	22 15.2	+ 3 23.0	−0.4905	0.5838	−0.0005	+16	−42
54 Aurigæ	6.0	1.50	4.5	28 21.4	23 57.7	+ 5 1.5	−0.7567	0.5832	0.0055	− 1	−62
25 Geminorum	6.5	1.49	4.5	28 17.8	14 0 40.2	+ 5 42.3	−0.6998	0.5830	0.0078	+ 3	−58
47 Geminorum	6.0	+1.35	+ 3.8	+27 2.0	12 37.7	− 6 48.4	+0.3093	0.5789	−0.0431	+63	− 3
53 Geminorum	6.3	1.34	3.3	28 5.1	14 26.3	− 5 3.7	−0.8694	0.5780	0.0482	− 8	−62
59 Geminorum	6.9	1.30	3.0	27 50.8	17 54.6	− 1 43.7	−0.8081	0.5765	0.0578	− 4	−62
ι Geminorum	4.0	1.30	3.0	28 0.7	18 23.3	− 1 16.2	−1.0080	0.5749	0.0592	−18	−62
υ Geminorum	4.3	1.25	2.9	27 8.1	22 32.3	+ 2 43.2	−0.3629	0.5741	0.0709	+23	−40
c Geminorum	6.0	+1.20	+ 2.9	+26 2.4	15 1 55.1	+ 5 58.4	+0.5294	0.5719	−0.0800	+80	+ 6
φ Geminorum	5.0	1.17	2.3	27 2.7	5 46.3	+ 9 40.8	−0.8420	0.5696	0.0903	− 6	−63
ω^1 Cancri	6.0	1.13	2.4	25 41.3	8 53.2	−11 19.6	+0.2766	0.5676	0.0984	+60	− 9
ω^2 Cancri	6.3	1.13	2.5	25 23.2	9 13.7	−10 59.5	+0.5610	0.5675	0.0989	+83	+ 6
ψ^1 Cancri	6.8	1.10	2.0	26 9.7	12 46.6	− 7 34.5	−0.6215	0.5648	0.1080	+ 8	−59
ψ^2 Cancri	5.7	+1.09	+ 2.1	+25 50.0	12 53.0	− 7 28.3	−0.2861	0.5648	−0.1085	+28	−39
λ Cancri	5.7	1.04	2.1	24 21.7	17 11.0	− 3 19.8	+0.7736	0.5620	0.1189	+90	+16
υ^1 Cancri *mult.*	6.0	1.01	1.8	24 53.4	19 47.7	− 0 48.8	−0.1003	0.5602	0.1252	+38	−31
υ^2 Cancri	5.8	1.00	1.8	24 30.2	20 38.3	0 0.0	+0.2007	0.5594	0.1272	+56	−16
υ^3 Cancri	6.0	0.99	1.7	24 26.7	21 53.5	+ 1 12.5	+0.1021	0.5588	0.1300	+49	−21
υ^4 Cancri	5.7	+0.98	+ 1.7	+24 27.1	22 32.2	+ 1 49.8	+0.0106	0.5575	−0.1316	+44	−26
ξ Cancri	5.0	0.83	1.0	22 28.9	16 14 39.0	− 6 37.3	−0.3052	0.5459	0.1659	+27	−46
79 Cancri	6.3	0.82	1.0	22 26.0	15 5.9	− 6 11.3	−0.3283	0.5456	0.1666	+25	−47
B. A. C. 3138	6.3	0.81	1.1	21 43.7	16 35.9	− 4 44.5	+0.1704	0.5442	0.1695	+53	−22
B. A. C. 3206	6.3	0.76	1.0	20 15.3	21 44.0	+ 0 13.3	+0.8468	0.5403	0.1791	+90	+13
η Leonis	3.3	+0.61	+ 0.2	+17 17.3	17 18 2.0	− 4 8.1	+0.0574	0.5252	−0.2109	+47	−33
42 Leonis	6.0	0.56	+ 0.1	15 31.2	18 1 14.0	+ 2 50.5	+0.4098	0.5201	0.2200	+68	−16
i Leonis	5.7	0.53	− 0.1	+14 41.5	6 27.0	+ 7 54.0	+0.1422	0.5166	0.2259	+51	−30
				NEW	*MOON.*						
γ Virginis *mean.*	3.1	+0.33	− 3.2	− 0 51.5	21 4 27.6	+ 3 56.3	−0.2828	0.4904	−0.2570	+59	−29
θ Virginis	4.6	0.32	5.3	4 57.8	20 17.7	− 4 39.2	+0.2025	0.4900	0.2530	+32	−55
m Virginis	5.4	0.37	5.4	8 9.6	22 13 58.0	−11 27.5	−0.6630	0.4927	0.2439	+ 8	−88
4591 Virginis	6.0	0.38	5.6	9 10.1	17 3.5	− 8 27.1	−0.2975	0.4929	0.2422	+26	−60
Uranus				12 32.2	23 8 2.3	+ 6 6.8	−0.1054	0.4946	0.2297	+34	−50
λ Virginis	4.7	+0.46	− 6.9	−12 52.5	10 29.7	+ 8 30.1	−0.2925	0.4979	−0.2281	+25	−60
5 Libræ	6.6	0.56	7.9	15 0.4	24 0 50.9	− 1 33.0	−1.0960	0.5034	0.2132	−24	−90
α^1 Libræ	6.3	0.57	8.1	15 33.0	3 20.2	+ 0 52.0	−1.0180	0.5047	0.2103	−19	−90
α^2 Libræ	2.9	0.57	8.1	15 35.7	3 26.2	+ 0 57.8	−0.9919	0.5047	0.2101	−17	−90
B. A. C. 4896	6.6	0.57	8.5	17 20.6	3 46.5	+ 1 17.6	+0.8790	0.5049	0.2097	+73	+ 4
ι^1 Libræ	5.0	+0.66	− 9.2	−19 23.1	14 28.9	+11 41.1	+0.9716	0.5102	−0.1960	+71	+12
ι^2 Libræ	6.5	0.66	9.2	19 14.5	15 3.1	−11 45.7	+0.7015	0.5105	0.1951	+71	− 5
B. A. C. 5109	6.2	0.70	9.1	19 18.2	25 0 52.0	− 2 14.4	−1.0740	0.5154	0.1808	−27	−90
δ Scorpii	2.6	0.92	10.1	22 18.9	14 33.1	+11 1.5	−0.0591	0.5244	0.1584	+27	−47
19 Scorpii	5.1	1.05	10.5	23 54.6	26 0 19.1	− 3 31.1	+0.2450	0.5291	0.1403	+40	−30
δ Ophiuchi *mult.*	5.0	+1.09	−10.2	−23 12.0	2 41.4	− 1 13.4	−0.8672	0.5304	−0.1357	−18	−90
22 Scorpii	5.5	1.12	10.6	24 52.7	4 50.6	+ 0 51.6	+0.6974	0.5316	0.1314	+65	− 4
25 Scorpii	6.5	1.23	10.6	25 20.0	12 38.0	+ 8 23.7	+0.2369	0.5362	0.1155	+38	−30
18 Ophiuchi	6.7	1.25	10.2	24 27.1	13 59.5	+ 9 42.6	−0.8884	0.5369	0.1127	−22	−90
B. A. C. 5709	6.3	1.32	10.2	24 55.7	18 41.6	− 9 44.8	−0.8706	0.5396	0.1024	−23	−90
26 Ophiuchi	6.1	+1.32	−10.2	−24 49.5	18 46.8	− 9 39.8	−0.9915	0.5396	−0.1023	−30	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0. Δα	Red'ns from 1892.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	"	° '	d h m	h m				°	°
A Ophiuchi	4.7	+1.44	-10.3	-26 26.8	27 1 41.5	- 2 59.1	+0.1372	0.5437	-0.0869	+29	-36
38 Ophiuchi	6.7	1.44	10.3	26 30.7	2 42.2	- 2 0.5	+0.1225	0.5439	0.0845	+28	-37
3 Sagittarii *var.*	5.0	1.67	9.8	27 47.4	16 0.3	+10 49.9	+0.6057	0.5505	0.0526	+54	- 9
B. A. C. 6127	5.1	1.82	9.2	28 28.1	28 0 58.1	- 4 31.2	+0.9714	0.5544	0.0301	+62	+16
B. A. C. 6194	5.1	1.88	8.3	27 4.8	5 19.5	- 0 19.2	-0.6439	0.5560	-0.0186	-18	-90
φ Sagittarii	3.7	+2.07	- 7.0	-27 6.1	17 11.1	+11 6.6	-0.6542	0.5593	+0.0126	-19	-90
τ Sagittarii	3.6	2.23	6.1	27 49.7	29 2 14.5	- 4 10.1	+0.3506	0.5611	0.0369	+37	-23
B. A. C. 6628	5.9	2.33	5.0	28 4.4	9 41.2	+ 3 0.6	+0.9581	0.5618	0.0570	+62	+14
B. A. C. 6666	5.8	2.35	4.5	27 12.2	11 58.6	+ 5 13.0	+0.1654	0.5619	0.0630	+28	-34
ω Sagittarii	5.1	2.50	2.7	26 35.0	22 58.9	- 8 10.9	+0.3585	0.5622	0.0920	+42	-23
A Sagittarii	5.3	+2.51	- 2.4	-26 29.2	30 0 18.7	- 6 54.0	+0.3795	0.5622	+0.0957	+43	-22
OCTOBER.											
χ Capricorni	5.4	+2.76	+ 4.1	-21 37.4	1 6 7.7	- 2 10.1	-0.7370	0.5577	+0.1692	- 8	-90
φ Capricorni	5.5	2.78	4.6	21 5.8	9 11.7	+ 0 47.3	-0.7508	0.5569	0.1761	- 8	-90
33 Capricorni	5.7	2.81	5.3	21 18.4	12 53.5	+ 4 21.2	+0.1325	0.5560	0.1843	+38	-36
35 Capricorni	6.2	2.83	5.5	21 39.7	14 13.9	+ 5 38.7	+0.7482	0.5556	0.1872	+68	- 0
37 Capricorni	6.0	2.84	6.3	20 33.7	17 33.7	+ 8 51.3	+0.2454	0.5547	0.1943	+46	-30
ε Capricorni	4.7	+2.84	+ 6.6	-19 56.8	18 32.4	+ 9 48.0	-0.1938	0.5547	+0.1963	+23	-55
κ Capricorni	5.0	2.85	7.2	19 21.4	20 58.7	-11 50.9	-0.3133	0.5539	0.2012	+18	-62
B. A. C. 7550	6.3	2.86	7.0	20 6.6	21 13.3	-11 36.8	+0.5086	0.5539	0.2018	+61	-16
29 Aquarii *mult.*	6.5	2.86	9.1	17 28.9	2 5 42.0	- 3 26.1	-0.4034	0.5517	0.2181	+15	-68
56 Aquarii	6.3	2.88	9.8	15 7.9	18 6.1	+ 8 32.1	+0.0490	0.5489	0.2394	+40	-41
τ^2 Aquarii	4.1	+2.93	+13.0	-14 9.4	3 2 46.0	- 7 6.0	+1.1910	0.5468	+0.2521	+76	+26
74 Aquarii	6.0	2.91	13.6	12 11.1	4 31.6	- 5 24.0	-0.3506	0.5466	0.2544	+22	-64
ψ^1 Aquarii	4.1	2.91	15.3	9 40.3	14 38.6	+ 4 22.3	-0.2335	0.5453	0.2666	+29	-56
ψ^2 Aquarii	4.2	2.91	15.4	9 46.0	15 34.4	+ 5 16.1	+0.1117	0.5453	0.2676	+47	-38
ψ^3 Aquarii	4.8	2.91	15.4	10 11.8	16 3.0	+ 5 43.8	+0.6685	0.5453	0.2680	+79	- 9
B. A. C. 8274	7.0	+2.91	+17.4	- 6 58.6	4 5 29.4	- 5 17.3	+1.1390	0.5446	+0.2797	+83	+20
27 Piscium	5.1	2.90	18.0	4 9.0	10 5.8	- 0 50.3	-0.3735	0.5443	0.2823	+24	-65
29 Piscium	5.0	2.90	18.2	3 37.4	11 31.4	+ 0 32.4	-0.4937	0.5445	0.2830	+18	-73
4 Ceti	6.0	2.90	18.5	3 8.7	14 12.5	+ 3 8.0	-0.2029	0.5449	0.2844	+33	-55
5 Ceti	6.0	2.90	18.5	3 2.7	14 25.2	+ 3 20.3	-0.2408	0.5449	0.2844	+31	-57
B. A. C. 5	5.7	+2.90	+18.5	- 2 49.2	14 39.2	+ 3 33.8	-0.3976	0.5450	+0.2845	+23	-66
10 Ceti	6.2	2.90	19.3	- 0 38.6	22 45.4	+11 23.4	-0.2319	0.5455	0.2869	+32	-56
73 Piscium	5.9	2.89	20.2	+ 5 4.9	5 15 55.5	+ 3 58.1	-0.9365	0.5469	0.2857	- 6	-85
77 Piscium	5.9	2.89	20.2	4 20.3	16 21.0	+ 4 22.8	-0.0835	0.5470	0.2857	+39	-48
e Piscium	5.5	2.89	20.3	5 5.0	17 29.8	+ 5 29.2	-0.4878	0.5496	0.2852	+19	-72
88 Piscium	6.2	+2.88	+20.3	+ 6 25.8	20 17.4	+ 8 11.0	-1.0160	0.5509	+0.2839	-11	-84
B. A. C. 410	6.0	2.88	20.4	6 51.1	23 55.4	+11 41.3	-0.4024	0.5521	0.2819	+23	-65
JUPITER				6 35.8	6 0 37.1	-11 38.4	+0.0442	0.5572	0.2839	+46	-40
96 Piscium	6.6	2.88	20.4	6 44.5	2 37.2	- 9 42.5	+0.4644	0.5529	0.2803	+71	-19
o Piscium	4.4	2.88	20.4	8 37.1	9 44.8	- 2 50.0	+0.6032	0.5556	0.2748	+82	-11
54 Ceti	5.5	+2.88	+20.2	+10 30.8	12 6.7	- 0 33.2	-0.6064	0.5571	+0.2726	+12	-76
B. A. C. 609	6.0	2.88	20.1	11 46.6	15 47.6	+ 2 59.8	-0.8502	0.5588	0.2687	- 2	-78
29 Arietis	6.3	2.88	19.2	14 33.6	7 5 58.9	- 7 19.9	+0.1064	0.5657	0.2501	+49	-33
o Arietis	6.0	2.88	18.9	14 51.4	10 50.0	- 2 39.6	+1.0110	0.5683	0.2422	+90	+17
π Arietis	5.7	2.88	18.5	17 1.1	12 46.3	- 0 47.7	-0.6491	0.5693	0.2391	+ 9	-72
ρ^1 Arietis	7.0	+2.88	+18.2	+17 17.9	15 5.2	+ 1 26.0	-0.3775	0.5711	+0.2350	+23	-56
ρ^2 Arietis	6.0	2.88	18.1	17 53.8	15 26.7	+ 1 46.7	-0.8810	0.5711	0.2343	- 5	-72
ρ^3 Arietis	6.0	2.88	18.1	17 35.8	15 41.6	+ 2 1.1	-0.5283	0.5712	0.2338	+15	-65
53 Arietis	6.3	2.87	17.8	17 27.9	20 12.4	+ 6 21.6	+0.6371	0.5733	0.2251	+88	- 3
54 Arietis	6.3	2.88	17.6	18 23.0	20 34.0	+ 6 42.4	-0.1856	0.5736	0.2243	+34	-45
δ Arietis	4.5	+2.88	+17.3	+19 19.3	21 52.8	+ 7 58.1	-0.8200	0.5746	+0.2218	- 1	-71

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
τ^2 Arietis	5.3	+2.88	+16.8	+20 21.6	**8** 2 22.2	−11 42.8	−0.8736	0.5769	+0.2122	− 5	−70
65 Arietis	6.0	2.88	16.7	20 25.4	3 2.7	−11 3.8	−0.7900	0.5773	0.2108	0	−70
B. A. C. 1143	6.0	2.85	15.9	20 35.5	11 1.8	− 3 23.4	+0.6534	0.5815	0.1925	+90	+ 2
B. A. C. 1189	6.0	2.85	15.5	21 55.2	13 9.7	− 1 20.6	−0.2560	0.5825	0.1873	+30	−44
32 Tauri	6.0	2.85	15.0	22 10.2	15 53.4	+ 1 16.6	+0.0017	0.5838	0.1806	+44	−30
33 Tauri	6.3	+2.85	+14.8	+22 51.9	15 57.6	+ 1 20.6	−0.6779	0.5838	+0.1804	+ 6	−66
B. A. C. 1238	6.3	2.85	14.6	22 54.0	17 28.8	+ 2 48.3	−0.4434	0.5845	0.1766	+19	−54
36 Tauri	6.0	2.85	14.4	23 48.6	18 48.1	+ 4 4.4	−1.1160	0.5852	0.1732	−24	−66
A^1 Tauri	4.7	2.84	14.7	21 47.4	18 57.8	+ 4 13.8	+0.9173	0.5853	0.1727	+90	+19
A^2 Tauri	6.3	2.84	14.7	21 43.3	19 12.6	+ 4 28.0	+1.0280	0.5853	0.1720	+90	+27
62 Tauri	6.0	+2.82	+13.2	+24 3.1	**9** 2 25.4	+11 23.4	−0.1180	0.5882	+0.1527	+37	−34
95 Tauri	6.3	2.78	12.2	23 53.2	9 49.4	− 5 30.5	+1.1030	0.5907	0.1315	+90	+36
k Tauri	6.0	2.75	11.1	24 53.1	15 30.6	− 0 3.3	+0.8041	0.5921	0.1149	+90	+18
136 Tauri	5.3	2.62	7.0	27 35.2	**10** 12 24.0	− 4 1.4	−0.1939	0.5934	+0.0499	+33	−28
49 Aurigæ	5.7	2.46	4.2	28 6.3	**11** 4 22.2	+11 17.5	−0.3296	0.5895	−0.0005	+25	−32
54 Aurigæ	6.0	+2.44	+ 4.0	+28 21.4	6 2.5	−11 6.2	−0.5948	0.5889	−0.0058	+10	−50
25 Geminorum	6.5	2.44	3.8	28 17.8	6 44.1	−10 26.3	−0.5387	0.5886	0.0079	+13	−46
47 Geminorum	6.0	2.28	2.4	27 1.9	18 27.9	+ 0 49.2	+0.4615	0.5828	0.0436	+74	+ 6
53 Geminorum	6.3	2.27	1.7	28 5.0	20 14.9	+ 2 32.0	−0.7087	0.5819	0.0488	+ 3	−61
59 Geminorum	6.9	2.23	1.3	27 50.7	23 40.0	+ 5 49.1	−0.6462	0.5797	0.0588	+ 7	−57
ι Geminorum	4.0	+2.22	+ 1.2	+28 0.6	**12** 0 8.1	+ 6 16.1	−0.8467	0.5793	−0.0600	− 6	−62
b^2 Geminorum	6.3	2.20	0.9	28 8.3	1 45.6	+ 7 49.7	−1.0810	0.5781	0.0647	−24	−62
B. A. C. 2472	6.5	2.19	0.8	28 8.0	2 6.0	+ 8 9.4	−1.0980	0.5779	0.0656	−26	−62
υ Geminorum	4.3	2.15	0.9	27 8.0	4 13.8	+10 12.1	−0.2061	0.5766	0.0716	+33	−31
c Geminorum	6.0	2.10	+ 0.8	26 2.3	7 34.0	−10 35.3	+0.6785	0.5744	0.0807	+90	+14
ϕ Geminorum	5.0	+2.07	− 0.1	+27 2.6	11 22.7	− 6 55.4	−0.6974	0.5712	−0.0910	+ 4	−62
ω^1 Cancri	6.0	2.00	0.1	25 41.2	14 27.6	− 3 57.5	+0.4269	0.5690	0.0992	+71	− 1
ω^2 Cancri	6.3	1.99	0.1	25 23.1	14 47.8	− 3 38.0	+0.7092	0.5689	0.1000	+90	+14
ψ^1 Cancri	6.8	1.95	0.7	26 9.6	18 18.9	− 0 14.9	−0.4697	0.5659	0 1090	+17	−50
ψ^2 Cancri	5.7	1.95	0.6	25 49.9	18 25.4	− 0 8.5	−0.1396	0.5659	0.1091	+36	−31
λ Cancri	5.7	+1.87	− 0.7	+24 21.6	22 41.4	+ 3 57.9	+0.9191	0.5623	−0.1198	+90	+24
υ^1 Cancri *mult.*	6.0	1.84	1.2	24 53.3	**13** 1 17.2	+ 6 28.1	+0.0456	0.5602	0.1259	+46	−23
υ^2 Cancri	5.8	1.83	1.2	24 30.1	2 7.5	+ 7 16.5	+0.3455	0.5597	0.1278	+65	− 8
υ^3 Cancri	6.0	1.81	1.2	24 26.6	3 22.5	+ 8 28.8	+0.2440	0.5584	0.1308	+59	−14
υ^4 Cancri	5.7	1.80	1.3	24 27.0	4 0.7	+ 9 5.6	+0.1545	0.5554	0.1322	+53	−18
ξ Cancri	5.0	+1.58	− 2.5	+22 28.8	20 5.4	+ 0 36.5	−0.1683	0.5445	−0.1662	+34	−39
79 Cancri	6.3	1.57	2.6	22 25.9	20 32.5	+ 1 2.6	−0.1914	0.5439	0.1670	+33	−40
B. A. C. 2938	6.3	1.54	2.6	21 43.6	22 2.5	+ 2 29.4	+0.3031	0.5425	0.1698	+62	−15
B. A. C. 3206	6.3	1.47	2.6	20 15.2	**14** 3 10.9	+ 7 27.5	+0.9781	0.5388	0.1793	+90	+21
η Leonis	3.3	1.22	3.5	17 17.2	23 34.5	+ 3 11.8	+0.1722	0.5219	0.2105	+53	−27
12 Leonis	6.0	+1.13	− 3.6	+15 31.1	**15** 6 49.7	+10 13.6	+0.5182	0.5166	−0.2196	+76	−11
i Leonis	5.7	1.08	3.8	14 41.4	12 5.3	− 8 40.4	+0.2434	0.5133	0.2254	+57	−26
ν Virginis	4.0	0.73	4.6	7 8.0	**17** 3 24.9	+ 5 31.8	−1.0250	0.4940	0.2533	−12	−83
b Virginis	5.8	0.67	4.6	4 15.3	11 14.4	−10 51.5	+0.1410	0.4917	0.2557	+51	−36
10 Virginis	6.4	0.63	4.6	+ 2 30.1	16 40.8	− 5 34.0	+0.6766	0.4903	0.2566	+88	− 8
Saturn				− 0 26.7	**18** 4 49.6	+ 6 15.3	+0.8019	0.4841	−0.2556	+90	− 2
γ^1 Virginis	3.1	+0.54	− 5.2	0 51.6	10 43.5	+11 59.6	−0.2595	0.4816	0.2572	+33	−58
				NEW	*MOON.*						
α^2 Libræ	2.9	0 49	7.8	15 35.7	**21** 9 52.1	+ 9 11.2	−1.0460	0.5059	0.2113	−20	−90
ι^1 Libræ	5.0	+0.52	− 8.3	−19 23.1	20 54.2	− 4 6.1	+0.9158	0.5112	−0.1972	+71	+ 7
ι^2 Libræ	6.5	0.52	8.3	19 14.5	21 28.2	− 3 33.1	+0.6451	0.5116	0.1963	+69	− 9
B. A. C. 5109	6.2	0.59	8.4	19 18.2	**22** 7 16.7	+ 5 57.8	−1.1430	0.5169	0.1820	−32	−90
δ Scorpii	2.6	0.69	9.1	22 18.9	20 57.6	− 4 46.5	−0.1314	0.5242	0.1592	+23	−51
19 Scorpii	5.1	0.77	9.4	23 54.6	**23** 6 44.1	+ 4 41.4	+0.1700	0.5302	0.1410	+37	−34
ρ Ophiuchi *mult.*	5.0	+0.79	− 9.2	−23 12.0	9 6.6	+ 6 59.3	−0.9462	0.5313	−0.1364	−24	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0. Δα	Red'ns from 1892.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
22 Scorpii	5.5	+0.81	- 9.5	-24 52.7	23 11 16.1	+ 9 4.6	+0.6243	0.5322	-0.1320	+61	- 9
25 Scorpii	6.5	0.90	9.5	25 20.0	19 4.7	- 7 22.1	+0.1568	0.5363	0.1158	+34	-35
18 Ophiuchi	6.7	0.91	9.2	24 27.1	20 26.5	- 6 3.0	-0.9736	0.5370	0.1131	-28	-90
B. A. C. 5709	6.3	0.97	9.2	24 55.7	24 1 9.7	- 1 29.2	-0.9561	0.5395	0.1028	-28	-90
26 Ophiuchi	6.1	0.97	9.2	24 49.5	1 15.0	- 1 24.1	-1.0790	0.5395	0.1027	-36	-90
A Ophiuchi	4.7	+1.06	- 9.3	-26 26.7	8 12.0	+ 5 18.9	+0.0533	0.5424	-0.0870	+25	-40
38 Ophiuchi	6.7	1.07	9.3	26 30.6	9 13.0	+ 6 17.9	+0.0368	0.5433	0.0844	+24	-39
3 Sagittarii *var.*	5.0	1.25	8.8	27 47.4	22 37.6	- 4 45.3	+0.5240	0.5484	0.0526	+49	-14
B. A. C. 6127	5.1	1.39	8.6	28 28.1	25 7 41.4	+ 3 59.6	+0.8932	0.5513	0.0300	+62	+10
B. A. C. 6194	5.1	1.45	8.2	27 4.8	12 6.0	+ 8 14.9	-0.7350	0.5525	-0.0188	-23	-90
φ Sagittarii	3.7	+1.63	- 7.1	-27 6.1	26 0 8.6	- 4 8.2	-0.7480	0.5550	+0.0123	-24	-90
τ Sagittarii	3.6	1.77	6.5	27 49.7	9 22.2	+ 4 45.6	+0.2677	0.5558	0.0364	+32	-28
B. A. C. 6628	5.9	1.88	5.8	28 4.5	16 58.2	-11 54.7	+0.8863	0.5558	0.0562	+62	+ 9
B. A. C. 6666	5.8	1.90	5.2	27 12.3	19 18.8	- 9 39.1	+0.0846	0.5559	0.0623	+24	-38
ω Sagittarii	5.1	2.04	3.7	26 35.0	27 6 35.0	+ 1 12.8	+0.2792	0.5549	0.0911	+37	-28
b Sagittarii	4.6	+2.05	- 3.9	-27 27.2	7 3.5	+ 1 40.4	+0.1256	0.5549	+0.0922	+29	-37
A Sagittarii	5.3	2.06	- 3.5	26 29.2	7 57.0	+ 2 32.0	+0.3021	0.5546	0.0944	+39	-27
χ Capricorni	5.4	2.35	+ 2.4	21 37.4	28 14 38.7	+ 8 8.7	-0.8233	0.5481	0.1668	-13	-90
φ Capricorni	5.5	2.38	3.0	21 5.8	17 48.5	+11 11.9	-0.8395	0.5474	0.1735	-13	-90
33 Capricorni	5.7	2.43	3.5	21 18.4	21 37.7	- 9 6.7	+0.0629	0.5462	0.1816	+35	-40
35 Capricorni	6.2	+2.46	+ 3.6	-21 39.7	23 0.6	- 7 46.7	+0.6879	0.5459	+0.1843	+68	- 6
37 Capricorni	6.0	2.47	4.4	20 33.7	29 2 27.0	- 4 27.4	+0.1795	0.5449	0.1908	+42	-34
ε Capricorni	4.7	2.47	4.7	19 56.8	3 27.7	- 3 28.8	-0.2683	0.5449	0.1934	+19	-59
κ Capricorni	5.0	2.49	5.3	19 21.4	5 58.9	- 1 2.8	-0.3893	0.5442	0.1982	+14	-67
B. A. C. 7550	6.3	2.50	5.1	20 6.6	6 14.0	- 0 48.2	+0.4448	0.5441	0.1986	+57	-20
29 Aquarii *mult.*	6.5	+2.55	+ 7.2	-17 28.9	14 59.6	+ 7 39.5	-0.4768	0.5418	+0.2146	+11	-73
56 Aquarii	6.3	2.64	9.6	15 8.0	30 3 48.2	- 3 57.8	-0.0086	0.5337	0.2366	+38	-44
τ² Aquarii	4.1	2.71	11.0	14 9.4	12 44.5	+ 4 40.6	+1.1500	0.5379	0.2484	+76	+22
74 Aquarii	6.0	2.70	11.9	12 11.1	14 33.3	+ 6 25.8	-0.4097	0.5375	0.2507	+19	-68
ψ¹ Aquarii	4.1	2.73	13.8	9 40.3	31 0 58.2	- 7 30.0	-0.2836	0.5368	0.2629	+27	-59
ψ² Aquarii	4.2	+2.75	+13.9	- 9 46.0	1 55.5	- 6 34.6	+0.0641	0.5367	+0.2641	+45	-40
ψ³ Aquarii	4.8	2.75	13.8	10 11.8	2 24.8	- 6 6.3	+0.6275	0.5367	0.2644	+78	-11
B. A. C. 8274	7.0	2.82	16.1	6 58.6	16 12.0	+ 7 13.5	+1.1120	0.5370	0.2766	+83	+18
27 Piscium	5.1	2.83	17.1	4 9.0	20 54.5	+11 46.7	-0.4116	0.5375	0.2796	+22	-67
29 Piscium	5.0	+2.83	+17.4	- 3 37.4	22 21.9	-10 48.9	-0.5311	0.5379	+0.2805	+16	-76
NOVEMBER.											
4 Ceti	6.0	+2.85	+17.7	- 3 8.7	1 1 6.2	- 8 10.1	-0.2378	0.5384	+0.2818	+30	-57
5 Ceti	6.0	2.86	17.7	3 2.7	1 19.2	- 7 57.5	-0.2777	0.5388	0.2819	+29	-59
B. A. C. 5	5.7	+2.86	+17.7	- 2 49.2	1 33.4	- 7 43.8	-0.4339	0.5388	+0.2820	+21	-69
10 Ceti	6.2	2.90	17.9	- 0 38.6	9 48.5	+ 0 14.8	-0.2598	0.5404	0.2849	+30	-58
73 Piscium	5.9	2.98	20.5	+ 5 4.9	2 3 10.9	- 6 58.2	-0.9521	0.5469	0.2849	- 7	-85
77 Piscium	5.9	2.99	20.4	4 20.3	3 36.1	- 6 33.9	-0.0985	0.5470	0.2849	+38	-48
e Piscium	5.5	2.99	20.6	5 5.0	4 45.4	- 5 26.9	-0.5055	0.5475	0.2845	+18	-73
Jupiter				+ 5 18.4	6 4.5	- 4 10.6	-0.3510	0.5576	+0.2884	+26	-63
88 Piscium	6.2	+3.01	+20.8	6 25.8	7 33.9	- 2 44.2	-1.0300	0.5488	0.2835	-12	-84
B. A. C. 410	6.0	3.03	20.9	6 51.1	11 12.9	+ 0 47.2	-0.4112	0.5512	0.2821	+23	-65
96 Piscium	6.6	3.05	20.9	6 44.5	13 55.2	+ 3 23.8	+0.4778	0.5520	0.2804	+71	-19
o Piscium	4.4	3.09	21.1	8 37.1	21 2.7	+10 16.1	+0.5973	0.5560	0.2755	+82	-11
54 Piscium	5.5	+3.10	+21.2	+10 30.8	23 24.2	-11 27.4	-0.6099	0.5576	+0.2734	+12	-76
B. A. C. 609	6.0	3.13	21.2	11 46.6	3 3 4.3	- 7 55.1	-0.8478	0.5602	0.2701	- 1	-78
29 Arietis	6.3	3.22	20.7	14 33.7	17 7.8	+ 5 37.3	+0.1091	0.5699	0.2525	+50	-33
ο Arietis	6.0	3.26	20.3	14 51.5	21 55.0	+10 13.6	+1.0100	0.5731	0.2446	+90	+17
π Arietis	5.7	3.28	20.2	17 1.2	23 49.5	-11 56.2	-0.6360	0.5744	0.2415	+10	-71
ρ¹ Arietis	7.0	+3.28	+20.0	+17 18.0	4 2 6.1	- 9 44.9	-0.3644	0.5758	+0.2375	+24	-56

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	′	° ′	d h m	h m				°	°
ρ^2 Arietis	6.0	+3.29	+19.9	+17 53.9	4 2 27.3	− 9 24.4	−0.8642	0.5765	+0.2369	− 4	−72
ρ^3 Arietis	6.0	3.30	19.9	17 35.9	2 41.9	− 9 10.4	−0.5142	0.5765	0.2363	+16	−64
53 Arietis	6.3	3.32	19.5	17 27.9	7 7.7	− 4 54.8	+0.6445	0.5797	0.2279	+88	− 2
54 Arietis	6.3	3.32	19.5	18 23.0	7 29.0	− 4 34.4	−0.1726	0.5798	0.2273	+34	−44
δ Arietis	4.5	3.35	19.3	19 19.3	8 46.2	− 3 20.3	−0.7977	0.5809	0.2246	0	−71
τ^2 Arietis	5.3	+3.38	+18.8	+20 21.6	13 10.0	+ 0 53.3	−0.8453	0.5838	+0.2151	− 3	−70
65 Arietis	6.0	3.38	18.7	20 25.4	13 49.4	+ 1 31.1	−0.7674	0.5843	0.2137	+ 2	−70
B. A. C. 1143	6.0	3.41	17.6	20 35.5	21 37.2	+ 9 0.1	+0.6653	0.5893	0.1960	+90	+ 2
B. A. C. 1189	6.0	3.44	17.1	21 55.2	23 41.8	+10 59.7	−0.2333	0.5907	0.1904	+31	−44
32 Tauri	6.0	3.44	16.8	22 10.2	5 2 21.1	−10 27.5	+0.0180	0.5923	0.1835	+44	−30
33 Tauri	6.3	+3.45	+16.6	+22 51.9	2 25.2	−10 23.5	−0.6513	0.5926	+0.1833	+ 8	−65
B. A. C. 1238	6.3	3.46	16.4	22 54.0	3 53.9	− 8 58.4	−0.4165	0.5934	0.1796	+21	−52
36 Tauri	6.0	3.48	16.0	23 48.6	5 11.0	− 7 44.5	−1.0800	0.5943	0.1759	−21	−66
A¹ Tauri	4.7	3.44	16.3	21 47.4	5 20.3	− 7 32.6	+0.9266	0.5946	0.1756	+90	+20
A² Tauri	6.3	3.44	16.3	21 43.3	5 34.7	− 7 21.8	+1.0360	0.5947	0.1751	+90	+27
62 Tauri	6.2	+3.50	+14.8	+24 3.2	12 34.9	− 0 39.0	−0.0950	0.5982	+0.1554	+38	−32
95 Tauri	6.3	3.49	13.3	23 53.2	19 45.0	+ 6 13.1	+1.1090	0.6013	0.1341	+90	+33
k Tauri	6.0	3.50	12.2	24 53.1	6 1 14.8	+11 29.0	+0.8149	0.6033	0.1169	+90	+19
136 Tauri	5.3	3.49	7.4	27 35.2	21 24.4	+ 6 46.9	−0.1630	0.6053	+0.0509	+34	−27
49 Aurigæ	5.7	3.39	3.7	28 6.3	7 12 48.4	− 2 28.5	−0.2988	0.6009	−0.0007	+26	−30
54 Aurigæ	6.0	+3.38	+ 3.2	+28 21.4	14 25.0	− 0 55.9	−0.5580	0.6002	−0.0058	+12	−47
25 Geminorum	6.5	3.36	3.1	28 17.8	15 5.1	− 0 17.5	−0.5028	0.5998	0.0081	+15	−43
47 Geminorum	6.0	3.22	0.9	27 1.9	8 2 24.6	+10 33.8	+0.4793	0.5939	0.0442	+76	+ 7
53 Geminorum	6.3	3.23	+ 0.2	28 5.0	4 7.9	−11 47.4	−0.6714	0.5924	0.0512	+ 5	−59
59 Geminorum	6.9	3.18	− 0.5	27 50.7	7 26.0	− 8 37.2	−0.6122	0.5900	0.0595	+ 9	−55
ι Geminorum	4.0	+3.18	− 0.6	+28 0.6	7 53.3	− 8 11.0	−0.8078	0.5896	−0.0611	− 4	−62
*b*² Geminorum	6.3	3.15	0.9	28 8.3	9 27.9	− 6 40.4	−1.0390	0.5883	0.0659	−21	−62
B. A. C. 2472	6.5	3.15	1.0	28 8.0	9 47.3	− 6 21.7	−1.0550	0.5880	0.0668	−22	−62
υ Geminorum	4.3	3.11	1.2	27 8.0	11 51.1	− 4 22.9	−0.1773	0.5862	0.0730	+33	−30
c Geminorum	6.0	3.05	1.5	26 2.3	15 4.7	− 1 17.0	+0.6921	0.5837	0.0822	+90	+14
φ Geminorum	5.0	+3.02	− 2.6	+27 2.6	18 46.2	+ 2 15.7	−0.6613	0.5792	−0.0927	+ 6	−60
ω^1 Cancri	6.0	2.95	2.7	25 41.2	21 45.3	+ 5 7.8	+0.4447	0.5780	0.1008	+73	0
ω^2 Cancri	6.3	2.94	2.8	25 23.1	22 5.3	+ 5 27.1	+0.7230	0.5777	0.1016	+90	+14
ψ^1 Cancri	6.8	2.91	3.6	26 9.6	9 1 30.2	+ 8 44.0	−0.4406	0.5741	0.1107	+19	−48
ψ^2 Cancri	5.7	2.90	3.5	25 49.9	1 36.5	+ 8 50.1	−0.1136	0.5740	0.1112	+37	−30
λ Cancri	5.7	+2.81	− 3.8	+24 21.6	5 45.2	−11 10.6	+0.9285	0.5703	−0.1217	+90	+25
υ^1 Cancri *mult.*	6.0	2.78	4.4	24 53.3	8 16.8	− 8 44.7	+0.0657	0.5678	0.1277	+48	−22
υ^2 Cancri	5.8	2.77	4.5	24 30.1	9 5.8	− 7 57.5	+0.3616	0.5669	0.1298	+66	− 7
υ^3 Cancri	6.0	2.75	4.6	24 26.6	10 18.6	− 6 47.5	+0.2632	0.5657	0.1326	+59	−13
υ^4 Cancri	5.7	2.74	4.7	24 27.0	10 56.1	− 6 11.4	+0.1732	0.5650	0.1343	+54	−18
ξ Cancri	5.0	+2.49	− 6.7	+22 28.8	10 2 37.9	+ 8 56.5	−0.1488	0.5495	−0.1681	+35	−38
79 Cancri	6.3	2.48	6.7	22 25.9	3 4.3	+ 9 22.0	−0.1716	0.5489	0.1689	+34	−39
B. A. C. 3138	6.3	2.45	6.7	21 43.6	4 32.5	+10 47.0	+0.3207	0.5476	0.1718	+63	−14
B. A. C. 3206	6.3	2.35	7.0	20 15.1	9 34.9	− 8 21.0	+0.9863	0.5423	0.1811	+90	+22
η Leonis	3.3	2.04	8.4	17 17.1	11 5 39.7	+11 4.4	+0.1869	0.5241	0.2117	+54	−26
42 Leonis	6.0	+1.94	− 8.6	+15 31.0	12 50.1	− 5 58.6	+0.5289	0.5180	−0.2204	+77	−10
i Leonis	5.7	1.86	8.8	14 41.3	18 2.8	− 0 55.4	+0.2581	0.5142	0.2260	+58	−25
ν Virginis	4.0	1.38	9.4	7 8.0	13 9 15.5	−10 50.2	−1.0170	0.4923	0.2524	−11	−83
b Virginis	5.8	1.29	9.0	4 15.3	17 5.8	− 3 12.7	+0.1462	0.4897	0.2547	+51	−35
10 Virginis	6.4	1.23	8.8	+ 2 30.1	22 33.5	+ 2 6.1	+0.6795	0.4884	0.2558	+89	− 8
γ^1 Virginis	3.1	+1.08	− 8.9	− 0 51.6	14 16 39.7	− 4 16.3	−0.2576	0.4860	−0.2563	+30	−58
SATURN				1 35.1	17 8.2	− 3 49.0	+0.4216	0.4819	0.2544	+68	−22
38 Virginis	6.2	1.03	8.7	2 58.1	23 10.3	+ 2 3.4	+0.4091	0.4861	0.2552	+67	−23
k Virginis	5.9	1.00	8.8	3 13.8	15 2 49.9	+ 5 37.2	−0.2361	0.4863	0.2544	+31	−57
46 Virginis	6.1	+1.00	− 8.6	2 47.3	3 22.0	+ 6 8.5	−0.8576	0.4864	0.2542	− 2	−90
VENUS				− 4 10.6	4 59.4	+ 7 44.3	+0.2663	0.4362	−0.2332	+58	−31

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0. Δα	Red'ns from 1892.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	″	° ′	d h m	h m				°	°
48 Virginis	6.7	+0.99	− 8.9	− 3 5.0	15 5 14.4	+ 7 57.9	−1.0090	0.4866	−0.2537	−11	−90
θ Virginis	4.6	0.96	8.6	4 57.8	8 39.3	+11 17.3	+0.2085	0.4868	0.2525	+54	−33
m Virginis	5.4	0.86	8.7	8 9.6	16 2 27.3	+ 4 36.7	−0.6753	0.4906	0.2443	+ 7	−89
B. A. C. 4591	6.0	0.85	8.6	9 10.1	5 33.7	+ 7 38.0	−0.3111	0.4917	0.2426	+25	−61
λ Virginis	4.7	0.78	8.6	12 52.5	23 3.2	+ 0 38 6	−0.3206	0.4977	0.2289	+23	−62
Uranus				−13 38.8	17 3 35.3	+ 5 3.2	−0.4930	0.4971	−0.2242	+14	−74
α^2 Libræ	2.9	+0.75	− 8.6	15 35.7	15 59.6	− 6 53.8	−1.0320	0.5062	0.2113	−19	−90
				NEW	*MOON.*						
A Ophiuchi	4.7	0.98	8.5	26 26.7	20 14 4.9	−11 0.8	+0.0865	0.5454	0.0869	+27	−38
38 Ophiuchi	6.7	+0.99	− 8.5	−26 30.6	15 5.7	−10 2.0	+0.0717	0.5454	−0.0846	+26	−39
Mercury				25 41.3	19 59.3	− 5 18.5	−1.2220	0.4982	0.0711	−52	−90
3 Sagittarii *var.*	5.0	1.11	8.1	27 47.4	21 4 27.6	+ 2 52.2	+0.5669	0.5512	0.0523	+51	−11
B. A. C. 6127	5.1	1.20	7.8	28 28.1	13 30.4	+11 36.0	+0.9391	0.5535	0.0297	+62	+13
B. A. C. 6194	5.1	1.23	7.4	27 4.8	17 54.9	− 8 8.9	−0.6928	0.5546	−0.0185	−20	−90
φ Sagittarii	3.7	+1.36	− 6.6	−27 6.1	22 5 57.9	+ 3 28.6	−0.6995	0.5558	+0.0128	−21	−90
τ Sagittarii	3.6	1.47	6.0	27 49.7	15 13.3	−11 35.8	+0.3233	0.5560	0.0371	+35	−25
B. A. C. 6628	5.9	1.55	5.5	28 4.5	22 51.8	− 4 13.7	+0.9473	0.5552	0.0565	+62	+13
B. A. C. 6666	5.8	1.56	5.0	27 12.3	23 1 13.3	− 1 57.2	+0.1412	0.5552	0.0625	+27	−35
ω Sagittarii	5.1	1.68	3.6	26 35.0	12 35.6	+ 9 1.0	+0.3442	0.5530	0.0912	+41	−24
A Sagittarii	5.3	+1.70	− 3.6	−26 29.2	13 58.4	+10 20.8	+0.3676	0.5529	+0.0946	+43	−23
χ Capricorni	5.4	1.99	+ 1.2	21 37.5	24 21 11.1	− 7 31.4	−0.7568	0.5428	0.1654	− 9	−90
φ Capricorni	5.5	2.02	1.7	21 5.9	25 0 25.1	− 4 24.0	−0.7713	0.5416	0.1720	− 9	−90
33 Capricorni	5.7	2.06	2.1	21 18.5	4 19.8	− 0 37.1	+0.1416	0.5403	0.1795	+39	−36
35 Capricorni	6.2	2.08	2.2	21 39.7	5 44.8	+ 0 45.0	+0.7709	0.5396	0.1827	+68	− 1
37 Capricorni	6.0	+2.10	+ 3.0	−20 33.7	9 16.5	+ 4 9.6	+0.2593	0.5384	+0.1891	+46	−29
ε Capricorni	4.7	2.11	3.3	19 56.8	10 18.7	+ 5 9.8	−0.1940	0.5380	0.1909	+23	−55
κ Capricorni	5.0	2.13	3.8	19 21.4	12 53.9	+ 7 39.8	−0.3171	0.5369	0.1957	+17	−62
B. A. C. 7550	6.3	2.14	3.6	20 6.6	13 9.6	+ 7 55.0	+0.5443	0.5369	0.1963	+63	−14
29 Aquarii *mult.*	6.5	2.21	5.5	17 28.9	22 10.4	− 7 21.9	−0.4032	0.5339	0.2115	+15	−68
56 Aquarii	6.3	+2.31	+ 7.8	−15 8.0	26 11 23.4	+ 5 25.1	+0.0713	0.5299	+0.2317	+42	−40
τ^2 Aquarii	4.1	2.38	9.1	14 9.5	20 38.4	− 9 37.8	+1.2540	0.5279	0.2437	+76	+32
74 Aquarii	6.0	2.40	9.9	12 11.2	22 31.1	− 7 48.7	−0.3318	0.5278	0.2461	+23	−63
ψ^1 Aquarii	4.1	2.46	11.9	9 40.3	27 9 18.9	+ 2 38.5	−0.2078	0.5264	0.2578	+31	−55
ψ^2 Aquarii	4.2	2.47	11.9	9 46.0	10 18.4	+ 3 36.1	+0.1459	0.5264	0.2586	+49	−36
ψ^3 Aquarii	4.8	+2.47	+11.8	−10 11.8	10 48.8	+ 4 5.6	+0.7190	0.5262	+0.2593	+80	− 6
B. A. C. 8274	7.0	2.59	14.1	6 58.6	28 1 7.3	− 6 3.3	+1.2080	0.5265	0.2707	+83	+25
27 Piscium	5.1	2.63	15.4	4 9.0	6 0.7	− 1 19.2	−0.3426	0.5271	0 2737	+26	−63
29 Piscium	5.0	2.64	15.7	3 37.4	7 31.4	+ 0 8.6	−0.4643	0.5274	0.2746	+20	−71
4 Ceti	6.0	2.65	16.1	3 8.7	10 21.9	+ 2 53.6	−0.1675	0.5278	0.2759	+34	−53
5 Ceti	6.0	+2.65	+16.1	− 3 2.7	10 35.4	+ 3 6.7	−0.2063	0.5278	+0.2759	+33	−55
B. A. C. 5	5.7	2.65	16.2	2 49.2	10 50.1	+ 3 20.9	−0.3686	0.5278	0.2760	+25	−65
10 Ceti	6.2	2.73	17.4	− 0 38.6	19 23.7	+11 38.2	−0.1935	0.5302	0.2790	+33	−54
Jupiter				+ 4 37.3	29 12 45.2	+ 4 26.5	−0.6234	0.5384	0.2799	+12	−82
73 Piscium	5.9	2.90	19.7	5 4.9	13 22.3	+ 5 1.4	−0.9082	0.5374	0.2796	− 4	−85
77 Piscium	5.9	+2.90	+19.5	+ 4 20.3	13 48.8	+ 5 27.0	−0.0416	0.5374	+0.2794	+42	−45
e Piscium	5.5	2.91	19.7	5 5.0	15 0.3	+ 6 36.1	−0.4512	0.5381	0.2791	+20	−69
88 Piscium	6.2	2.94	20.2	6 25.8	17 54.2	+ 9 24.2	−0.9877	0.5396	0.2783	− 9	−84
B. A. C. 410	6.0	2.98	20.3	6 51.1	21 40.0	−10 57.6	−0.3635	0.5418	0.2767	+25	−62
96 Piscium	6.6	3.01	20.3	6 44.5	30 0 27.1	− 8 16.1	+0.5156	0.5538	0.2754	+75	−16
o Piscium	4.4	+3 09	+20.6	+ 8 37.1	7 46.6	− 1 11.7	+0.6527	0.5486	+0.2709	+87	− 8
54 Ceti	5.5	3.12	21.1	10 30.8	10 11.9	+ 1 8.6	−0.5711	0.5500	0.2689	+14	−74
B. A. C. 609	6.0	+3.16	+21.3	+11 46.6	13 57.4	+ 4 46.2	−0.8174	0.5527	+0.2657	0	−78

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
29 Arietis	6.3	+3.34	+21.0	+14 33.7	**1** 4 18.6	- 5 23.7	+0.1395	0.5643	+0.2491	+51	-31
ο Arietis	6.0	3.41	20.7	14 51.5	9 10.4	- 0 42.6	+1.0410	0.5683	0.2417	+90	+19
π Arietis	5.7	3.44	20.8	17 1.2	11 6.6	+ 1 9.2	-0.6190	0.5699	0.2386	+11	-70
ρ^1 Arietis	7.0	3.47	20.8	17 18.0	13 25.1	+ 3 22.4	-0.3487	0.5723	0.2348	+25	-55
ρ^2 Arietis	6.0	3.48	20.8	17 53.9	13 46.6	+ 3 43.2	-0.8513	0.5724	0.2341	- 3	-72
ρ^3 Arietis	6.0	+3.48	+20.7	+17 35.9	14 1.4	+ 3 57.4	-0.4994	0.5725	+0.2337	+17	-63
53 Arietis	6.3	3.53	20.2	17 27.9	18 30.3	+ 8 16.1	+0.6607	0.5768	0.2253	+90	- 1
54 Arietis	6.3	3.55	20.2	18 23.0	18 51.7	+ 8 36.6	-0.1603	0.5771	0.2249	+35	-43
δ Arietis	4.5	3.57	20.1	19 19.3	20 9.7	+ 9 51.6	-0.7898	0.5779	0.2224	+ 1	-71
τ^2 Arietis	5.3	3.63	19.8	20 21.6	**2** 0 35.7	- 9 52.7	-0.8418	0.5817	0.2134	- 3	-80
65 Arietis	6.0	+3.65	+19.6	+20 25.4	1 15.5	- 9 14.5	-0.7633	0.5822	+0.2120	+ 2	-80
B. A. C. 1143	6.0	3.72	18.6	20 35.5	9 5.4	- 1 43.3	+0.6649	0.5891	0.1944	+90	+ 3
B. A. C. 1189	6.0	3.76	18.4	21 55.2	11 10.2	+ 0 16.4	-0.2385	0.5909	0.1892	+30	-43
32 Tauri	6.0	3.79	18.0	22 10.2	13 49.7	+ 2 49.5	+0.0098	0.5930	0.1825	+49	-25
33 Tauri	6.3	3.80	18.0	22 51.9	13 53.7	+ 2 53.3	-0.6586	0.5930	0.1825	+ 7	-66
B. A. C. 1238	6.3	+3.82	+17.7	+22 54.0	15 22.3	+ 4 18.3	-0.4265	0.5943	+0.1786	+20	-53
36 Tauri	6.0	3.85	17.5	23 48.6	16 39.4	+ 5 32.2	-1.0910	0.5953	0.1752	-22	-66
A^1 Tauri	4.7	3.82	17.4	21 47.4	16 48.6	+ 5 41.0	+0.9149	0.5954	0.1747	+90	+19
A^2 Tauri	6.3	3.82	17.3	21 43.3	17 3.1	+ 5 55.0	+1.0240	0.5955	0.1744	+90	+27
62 Tauri	6.0	3.93	16.0	24 3.2	**3** 0 1.8	-11 23.8	-0.1128	0.6006	0.1550	+37	-33
95 Tauri	6.3	+3.97	+14.5	+23 53.2	7 8.9	- 4 34.7	+1.0800	0.6045	+0.1339	+90	+35
k Tauri	6.0	4.02	13.2	24 53.1	12 35.2	+ 0 37.7	+0.7800	0.6074	0.1169	+90	+17
136 Tauri	5.3	4.19	7.6	27 35.2	**4** 8 25.6	- 4 23.6	-0.2126	0.6127	+0.0506	+32	-30
49 Aurigæ	5.7	4.18	3.5	28 6.3	23 28.2	+ 9 59.5	-0.3636	0.6102	-0 0017	+23	-34
54 Aurigæ	6.0	4.18	3.1	28 21.4	**5** 1 2.4	+11 29.7	-0.6215	0.6096	0.0068	+ 8	-36
25 Geminorum	6.5	+4.17	+ 2.9	+28 17.8	1 41.5	-11 52.9	-0.5667	0.6094	-0.0095	+11	-48
47 Geminorum	6.0	4.07	- 0.1	27 1.9	12 42.3	- 1 20.5	+0.3929	0.6042	0.0462	+69	+ 3
53 Geminorum	6.3	4.09	0.8	28 5.0	14 22.5	+ 0 15.6	-0.7464	0.6026	0.0514	0	-62
59 Geminorum	6.9	4.05	1.6	27 50.7	17 34.9	+ 3 19.8	-0.6892	0.5999	0.0617	+ 4	-60
ι Geminorum	4.0	4.05	1.8	28 0.6	18 1.3	+ 3 45.1	-0.8820	0.5999	0.0631	- 9	-62
υ Geminorum	4.3	+4.00	- 2.7	+27 8.0	21 51.9	+ 7 26.0	-0.2658	0.5969	-0.0750	+28	-35
c Geminorum	6.0	3.94	3.4	26 2.3	**6** 0 59.6	+10 26.0	+0.5880	0.5943	0.0846	+86	+10
φ Geminorum	5.0	3.93	4.5	27 2.5	4 34.1	-10 8.3	-0.7463	0.5910	0.0951	+ 1	-63
ω^1 Cancri	6.0	3.86	5.0	25 41.1	7 28.0	- 7 21.4	+0.3399	0.5886	0.1031	+65	- 6
ω^2 Cancri	6.3	3.85	5.1	25 23.0	7 47.0	- 7 3.2	+0.6144	0.5880	0.1044	+89	+ 8
ψ^1 Cancri	6.8	+3.83	- 6.0	+26 9.5	11 5.4	- 3 52.7	-0.5342	0.5851	-0.1136	+14	-54
ψ^2 Cancri	5.7	3.82	6.0	25 49.8	11 11.4	- 3 46.9	-0.2119	0.5849	0.1140	+32	-35
λ Cancri	5.7	3.73	6.6	24 21.5	15 12.3	+ 0 4.5	+0.8095	0.5808	0.1247	+90	+17
υ^1 Cancri *mult.*	6.0	3.71	7.2	24 53.2	17 38.9	+ 2 25.4	-0.0426	0.5785	0.1310	+20	-49
υ^2 Cancri	5.8	3.70	7.4	24 30.0	18 26.4	+ 3 11.1	+0.2489	0.5777	0.1329	+58	-14
υ^3 Cancri	6.0	+3.69	- 7.6	+24 26.5	19 36.8	+ 4 18.7	+0.1518	0.5762	-0.1358	+53	-18
υ^4 Cancri	5.7	3.69	7.7	24 26.9	20 13.1	+ 4 53.6	+0.0637	0.5759	0.1374	+47	-23
ξ Cancri	5.0	3.45	10.3	22 28.7	**7** 11 24.9	- 4 28.6	-0.2673	0.5590	0.1716	+29	-44
79 Cancri	6.3	3.44	10.4	22 25.8	11 50.5	- 4 3.9	-0.2915	0.5590	0.1724	+27	-45
B. A. C. 3138	6.3	3.41	10.7	21 43.5	13 15.9	- 2 41.7	+0.1900	0.5573	0.1753	+55	-21
B. A. C. 3206	6.3	+3.30	-11.2	+20 15.1	18 9.2	+ 2 1.2	+0.8418	0.5520	-0.1845	+90	+12
η Leonis	3.3	3.00	13.5	17 17.1	**8** 13 39.1	- 3 8.4	+0.0406	0.5315	0.2150	+46	-34
42 Leonis	6.0	2.87	14.0	15 31.0	20 38.2	+ 3 37.2	+0.3774	0.5249	0.2235	+66	-18
i Leonis	5.7	2.80	14.2	14 41.3	**9** 1 43.2	+ 8 32.7	+0.1062	0.5206	0.2291	+49	-32
ν Virginis	4.0	2.25	15.4	7 7.9	**10** 16 11.4	- 2 6.7	-1.1620	0.4950	0.2534	-22	-83
b Virginis	5.8	+2.15	-14.9	+ 4 15.2	23 55.8	+ 5 24.9	-0.0054	0.4917	-0.2555	+43	-43
10 Virginis	6.4	2.14	14.6	+ 2 30.0	**11** 5 19.8	+10 39.9	+0.5219	0.4901	0.2561	+75	-18
γ Virginis *mean.*	3.1	1.89	14.7	- 0 51.7	23 17.8	+ 4 8.9	-0.4011	0.4864	0.2557	+23	-66
SATURN				2 24.1	**12** 4 40.3	+ 9 22.8	-0.0872	0.4835	0.2538	+39	-48
38 Virginis	6.2	1.82	13.9	2 58.2	5 46.5	+10 27.2	+0.2661	0.4862	0.2546	+58	-30
k Virginis	5.9	+1.79	-13.9	- 3 13.9	9 25.1	-10 0.0	-0.3692	0.4863	-0.2535	+24	-64

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0. Δα	Red'ns from 1892.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	′′	° ′	d h m	h m				°	°
46 Virginis	6.1	+1.78	-14.1	- 2 47.4	**12** 9 57.1	- 9 28.9	-0.9919	0.4863	-0.2534	-10	-90
48 Virginis	6.7	1.77	14.0	3 5.1	11 49.3	- 7 39.6	-1.1410	0.4863	0.2527	-20	-90
θ Virginis	4.6	1.74	13.5	4 57.9	15 13.2	- 4 21.3	+0.0754	0.4863	0.2517	+47	-40
m Virginis	5.4	1.59	13.0	8 9.7	**13** 8 59.5	-11 3.6	-0.7920	0.4928	0.2430	0	-90
B. A. C. 4591	6.0	1.57	12.7	9 10.2	12 5.8	- 8 2.4	-0.4249	0.4943	0.2411	+19	-68
λ Virginis	4.7	+1.46	-11.9	-12 52.6	**14** 5 35.5	+ 8 58.4	-0.4181	0.4968	-0.2272	+18	-68
URANUS				14 8.0	13 18.8	- 7 31.3	-0.7480	0.4978	0.2194	0	-90
5 Libræ	6.6	1.38	11.4	15 0.4	19 57.1	- 1 4.3	-1.2140	0.5037	0.2126	-34	-90
α¹ Libræ	6.3	1.37	11.3	15 33.0	22 26.0	+ 1 20.3	-1.1340	0.5053	0.2097	-27	-90
α² Libræ	2.9	1.37	11.3	15 35.7	22 32.1	+ 1 26.2	-1.1070	0.5053	0.2095	-25	-90
B. A. C. 4896	6.6	+1.37	-11.0	-17 20.6	22 52.3	+ 1 45.8	+0.7643	0.5053	-0.2091	+73	- 2
ι¹ Libræ	5.0	1.34	10.7	19 23.1	**15** 9 33.1	-11 52.2	+0.8680	0.5116	0.1956	+71	+ 4
ι² Libræ	6.5	1.34	10.7	19 14.5	10 7.1	-11 19.2	+0.5978	0.5121	0.1949	+67	-11
B. A. C. 5109	6.2	1.30	10.4	19 18.2	19 53.4	- 1 50.5	-1.1690	0.5178	0.1807	-34	-90
δ Scorpii	2.6	1.28	9.7	22 18.9	**16** 9 29.7	+11 20.5	-0.1367	0.5266	0.1582	+23	-51
19 Scorpii	5.1	+1.29	- 9.3	-23 54.6	19 11.5	- 3 16.3	+0.1826	0.5327	-0.1401	+37	-33
ρ Ophiuchi *mult.*	5.0	1.28	9.2	23 12.0	21 32.8	- 0 59.6	-0.9268	0.5344	-0.1353	-22	-90
				NEW	*MOON.*						
σ Sagittarii	2.3	1.46	5.3	26 25.9	**19** 16 6.1	- 8 44.9	-1.2590	0.5602	+0.0254	-61	-74
τ Sagittarii	3.6	+1.50	- 5.1	-27 49.7	21 6.5	- 3 55.2	+0.4220	0.5601	+0.0384	+41	-20
B. A. C. 6666	5.8	1.56	4.1	27 12.3	**20** 7 1.3	+ 5 38.2	+0.2564	0.5591	0.0645	+33	-29
ω Sagittarii	5.1	1.63	3.0	26 35.0	18 18.1	- 7 29.2	+0.4731	0.5567	0.0930	+49	-17
A Sagittarii	5.3	1.64	- 2.9	26 29.2	19 40.5	- 6 9.7	+0.4980	0.5564	0.0966	+51	-15
χ Capricorni	5.4	1.79	+ 1.0	21 37.5	**22** 2 45.0	- 0 10.1	-0.5851	0.5446	0.1670	0	-84
27 Capricorni	6.5	+1.79	+ 1.2	-20 59.3	3 12.3	+ 0 16.3	-1.1880	0.5444	+0.1681	-39	-90
φ Capricorni	5.5	1.81	1.5	21 5.9	5 59.1	+ 2 57.4	-0.5971	0.5431	0.1735	0	-85
33 Capricorni	5.7	1.84	1.9	21 18.5	9 53.9	+ 6 44.3	+0.3228	0.5414	0.1811	+49	-26
35 Capricorni	6.2	1.86	2.0	21 39.8	11 19.0	+ 8 6.6	+0.9590	0.5408	0.1837	+68	+13
37 Capricorni	6.0	1.87	2.6	20 33.8	14 51.3	+11 31.8	+0.4514	0.5391	0.1904	+57	-19
ε Capricorni	4.7	+1.88	+ 2.8	-19 56.9	15 53.7	-11 27.9	-0.0018	0.5384	+0.1923	+33	-44
κ Capricorni	5.0	1.89	3.1	19 21.5	18 29.5	- 8 57.2	-0.1237	0.5373	0.1967	+27	-51
B. A. C. 7550	6.3	1.90	2.9	20 6.7	18 45.1	- 8 42.2	+0.7247	0.5371	0.1972	+70	- 4
29 Aquarii *mult.*	6.5	1.95	4.5	17 28.9	**23** 3 49.0	+ 0 3.9	-0.2025	0.5331	0.2121	+25	-55
56 Aquarii	6 3	2.03	6.5	15 8.0	17 9.8	-11 1.1	+0.2892	0.5281	0.2319	+53	-28
74 Aquarii	6.0	+2.11	+ 8.4	-12 11.2	**24** 4 26.9	- 0 5.4	-0.1116	0.5242	+0.2451	+34	-50
ψ¹ Aquarii	4.1	2.18	10.2	9 40.4	15 26.6	+10 33.7	+0.0210	0.5217	0.2558	+42	-42
χ Aquarii	5.3	2.18	10.6	8 18.8	15 56.6	+11 2.8	-1.2670	0.5216	0.2564	-33	-90
ψ² Aquarii	4.2	2.19	10.3	9 46.1	16 27.3	+11 32.5	+0.3797	0.5214	0.2566	+62	-24
ψ³ Aquarii	4.8	2.20	10.1	10 11.9	16 58.5	-11 57.3	+0.9607	0.5214	0.2570	+80	+10
24 Piscium	6.1	+2.31	+13.5	- 3 45.1	**25** 9 47.2	+ 4 20.1	-1.2960	0.5200	+0.2685	-34	-90
27 Piscium	5.1	2.35	13.6	4 9.1	12 38.3	+ 7 6.0	-0.1134	0.5200	0.2700	+37	-50
29 Piscium	5.0	2.37	13.8	3 37.5	14 11.6	+ 8 36.3	-0.2370	0.5201	0.2706	+30	-57
4 Ceti	6.0	2.38	14.2	3 8.7	17 6.9	+11 26.2	+0.0618	0.5202	0.2718	+47	-40
5 Ceti	6.0	2.38	14.2	3 2.7	17 20.9	+11 39.7	+0.0223	0.5202	0.2720	+44	-42
B. A. C. 5	5.7	+2.39	+14.4	- 2 49.2	17 36.0	+11 54.4	-0.1407	0.5202	+0.2720	+36	-51
10 Ceti	6.2	2.44	15.6	- 0 38.6	**26** 2 25.0	- 3 33.1	+0.0342	0.5219	0.2741	+45	-42
JUPITER				+ 4 54.4	20 58.2	- 9 35.1	-0.5375	0.5254	0.2726	+16	-75
73 Piscium	5.9	2.67	18.2	5 4.9	20 59.9	- 9 33.3	-0.7066	0.5274	0.2735	+ 7	-85
77 Piscium	5 9	2.67	18.0	4 20.3	21 27.4	- 9 6.6	+0.1730	0.5279	0.2735	+51	-34
c Piscium	5.5	+2.68	+18.2	+ 5 5.0	22 41.4	- 7 55.1	-0.2473	0.5284	+0.2732	+31	-56
88 Piscium	6.2	2.72	18.7	6 25.8	**27** 1 41.6	- 5 0.7	-0.7930	0.5297	0.2720	+ 2	-84
B. A. C. 410	6.0	2.77	18.9	6 51.1	5 35.5	- 1 14.3	-0.1639	0.5319	0.2705	+35	-49
96 Piscium	6.6	2.81	18.9	6 44.5	8 28.7	+ 1 33.2	+0.7269	0.5333	0.2693	+90	- 5
o Piscium	4.4	2.91	19.5	8 37.1	16 4.5	+ 8 54.0	+0 8561	0.5378	0.2645	+90	+ 4
54 Ceti	5.5	+2.94	+20.0	+10 30.8	18 35.1	+11 19.6	-0.3949	0.5398	+0.2626	+23	-63

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1892.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
B. A. C. 609	6.0	+3.01	+20.4	+11 46.6	27 22 29.0	− 8 54.4	−0.6460	0.5423	+0.2594	+10	−77
29 Arietis	6.3	3.24	20.6	14 33.7	28 13 21.8	+ 5 27.5	+0.3004	0.5537	0.2429	+61	−23
36 Arietis	6.5	3.34	21.1	17 18.7	18 16.1	+10 11.3	−1.2760	0.5581	0.2360	−36	−73
o Arietis	6.0	3.32	20.4	14 51.5	18 24.0	+10 18.9	−1.2090	0.5581	0.2358	+90	+33
π Arietis	5.7	3.37	20.8	17 1.2	20 24.2	−11 45.3	−0.4831	0.5601	0.2328	+18	−63
ρ^1 Arietis	7.0	+3.41	+20.7	+17 18.0	22 47.5	− 9 27.2	−0.2131	0.5618	+0.2290	+32	−47
ρ^2 Arietis	6.0	3.42	20.8	17 53.9	23 9.7	− 9 5.7	−0.7256	0.5624	0.2283	+ 4	−72
ρ^3 Arietis	6.0	3.42	20.7	17 35.9	23 25.0	− 8 51.0	−0.3678	0.5627	0.2280	+24	−56
53 Arietis	6.3	3.49	20.2	17 27.9	29 4 2.9	− 4 23.3	+0.8030	0.5667	0.2200	+90	+ 7
54 Arietis	6.3	3.51	20.4	18 23.0	4 25.1	− 4 1.9	−0.0332	0.5669	0.2195	+42	−37
δ Arietis	4.5	+3.54	+20.3	+19 19.3	5 45.8	− 2 44.3	−0.6748	0.5682	+0.2169	+ 7	−70
τ^1 Arietis	5.0	3.63	20.4	20 45.6	4 42.2	+ 1 3.2	−1.2670	0.5715	0.2093	−38	−69
τ^2 Arietis	5.3	3.63	20.2	20 21.6	10 20.3	+ 1 39.9	−0.7355	0.5724	0.2082	+ 4	−70
65 Arietis	6.0	3.64	20.1	20 25.4	11 1.4	+ 2 19.4	−0.6572	0.5729	0.2068	+ 8	−68
B. A. C. 1143	6.0	3.77	19.0	20 35.5	19 5.5	+10 4.9	+0.7739	0.5803	0.1894	+90	+ 9
B. A. C. 1189	6.0	+3.84	+18.9	+21 55.2	21 14.0	−11 51.7	−0.1457	0.5821	+0.1845	+35	−38
32 Tauri	6.0	3.88	18.5	22 10.2	23 57.9	− 9 14.2	+0.1010	0.5842	0.1780	+49	−25
33 Tauri	6.3	3.90	18.6	22 51.9	30 0 2.1	− 9 10.1	−0.5780	0.5842	0.1780	+12	−61
B. A. C. 1238	6.3	3.92	18.3	22 54.1	1 33.0	− 7 42.7	−0.3461	0.5860	0.1742	+24	−48
36 Tauri	6.0	3.96	18.3	23 48.6	2 52.2	− 6 26.8	−1.0210	0.5870	0.1708	−17	−65
A^1 Tauri	4.7	+3.92	+17.8	+21 47.4	3 1.4	− 6 18.0	+1.0120	0.5870	+0.1705	+90	+26
A^2 Tauri	6.3	3.92	17.8	21 43.3	3 16.5	− 6 3.5	+1.1200	0.5872	0.1698	+90	+34
62 Tauri	6.0	4.07	16.0	24 3.2	10 25.7	+ 0 48.3	−0.0463	0.5930	0.1511	+41	−30
k Tauri	6.0	4.27	14.0	24 53.1	23 15.2	−10 54.1	+0.8285	0.6020	0.1133	+90	+20
136 Tauri	5.3	+4.58	+ 8.8	+27 35.3	31 19 21.9	+ 8 20.9	−0.2205	0.6102	+0.0481	+31	−30

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1892.

Date.	The Star's		Immersion.				Emersion.				Duration of Occultation.
			Washington.		Angle from		Washington.		Angle from		
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
	NEW MOON.										
Jan. 8	σ Piscium	5½	1 16	6 4	15	48	2 13	7 1	276	291	0 57
10	τ Tauri	4½	23 30	4 10	85	140	0 28	5 8	229	287	0 58
10	99 Tauri	6	8 24	13 3	128	70	9 14	13 53	221	163	0 50
11	139 Tauri	5	8 14	12 49	98	40	9 28	14 3	264	203	1 14
12	39 Geminorum	6	8 35	13 6	134	82	9 37	14 8	244	185	1 2
16	*i* Leonis	6	6 58	11 14	175	227	7 35	11 51	232	281	0 37
24	18 Ophiuchi	7	13 42	17 25	74	109	14 41	18 24	334	359	0 59
	NEW MOON.										
Feb. 5	13 Tauri	6	8 21	11 18	97	42	9 19	12 16	237	184	0 58
5	14 Tauri	6	9 8	12 5	127	73	9 46	12 43	209	157	0 38
7	118 Tauri †	6	2 42	5 32	38	83	3 21	6 11	294	343	0 39
7	125 Tauri	6	9 20	12 9	43	343	10 6	12 55	319	260	0 46
12	η Leonis	3	3 22	5 52	65	115	4 7	6 37	295	347	0 45
12	42 Leonis	6	13 10	15 38	93	44	14 10	16 38	332	279	1 0
	NEW MOON.										
Mar. 4	υ^1 Tauri	5	10 42	11 48	93	41	11 35	12 41	254	206	0 53
4	υ^2 Tauri ‡	6	11 9	12 15	59	9	11 56	13 2	288	243	0 47
8	λ Cancri	6	11 37	12 28	100	42	12 42	13 33	304	246	1 5
14	κ Virginis	6	10 39	11 6	161	194	11 49	12 16	277	295	1 10
15	*m* Virginis	5	9 29	9 52	117	162	10 37	11 4	315	352	1 8
15	B. A. C. 4591	6	14 12	14 34	99	91	15 28	15 50	335	309	1 16
22	ω Sagittarii	5	17 8	17 3	38	69	18 4	17 58	312	334	0 55
	NEW MOON.										
Apr. 1	*k* Tauri	6	9 11	8 28	13	314	9 32	8 48	338	280	0 20
4	ω^2 Cancri	6	10 41	9 46	99	41	11 51	10 56	301	242	1 10
7	*i* Leonis	6	8 58	7 51	164	199	10 3	8 56	260	271	1 5
10	γ^1 Virginis	3	8 13	6 54	202	238	8 24	7 5	220	254	0 11
10	38 Virginis	6	17 28	16 8	173	124	18 8	16 48	247	197	0 40
12	URANUS		13 15	11 48	126	139	14 42	13 14	311	318	1 26
15	25 Scorpii	6½	17 56	16 16	111	95	19 23	17 43	273	241	1 27
	NEW MOON.										
29	125 Tauri ‡	6	12 16	9 42	114	63	13 2	10 28	248	202	0 46
May 1	*c* Geminorum	6	13 4	10 22	47	351	13 32	10 50	346	291	0 28
13	A Ophiuchi	5	12 51	9 22	149	194	13 45	10 16	253	291	0 54
13	38 Ophiuchi	7	13 52	10 23	119	156	15 9	11 39	282	306	1 16
	NEW MOON.										
29	λ Cancri ‡	6	14 54	10 22	86	36	15 41	11 8	308	261	0 46
June 4	*k* Virginis	6	11 13	6 18	142	169	12 37	7 41	300	305	1 23
4	θ Virginis *	5	19 17	14 20	126	75	20 13	15 16	282	232	0 56
5	*m* Virginis	6	10 9	5 10	92	133	11 12	6 13	344	17	1 3
5	B. A. C. 4591	6	15 18	10 18	56	33	16 11	11 11	12	343	0 53
12	ω Sagittarii	5	17 52	12 24	5	29	18 8	12 40	343	4	0 16
12	A Sagittarii	5	19 41	14 13	17	20	20 27	14 59	315	307	0 46

NOTE.—The angles of position are counted from the north point and vertex of the moon's limb, toward the east.
* Whole occultation below the horizon of Washington.
† Immersion below the horizon of Washington.
‡ Emersion below the horizon of Washington.

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1892.

Date.	THE STAR'S		IMMERSION.				EMERSION.				Duration of Occultation.
			Washington.		Angle from		Washington.		Angle from		
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
	NEW MOON.										
July 6	25 Scorpii	6½	19 50	12 47	101	65	21 5	14 2	271	226	1 15
9	B. A. C. 6666 †	6	14 54	7 40	41	87	15 37	8 23	324	5	0 43
11	35 Capricorni †	6	16 12	8 50	72	122	17 17	9 55	262	305	1 5
11	Mars		18 27	11 5	35	70	19 29	12 7	286	310	1 2
18	13 Tauri	6	20 33	12 43	119	167	21 4	13 14	195	246	0 31
	NEW MOON.										
Aug. 2	19 Scorpii	5	17 25	8 37	59	43	18 26	9 37	334	307	1 0
5	τ Sagittarii	4	15 59	6 59	60	94	17 6	8 6	307	330	1 7
10	B. A. C. 8274 †	7	17 30	8 10	77	129	18 26	9 6	233	283	0 56
15	υ² Tauri	6	22 21	12 41	112	165	23 0	13 20	204	259	0 39
	NEW MOON.										
31	3 Sagittarii	5	18 41	7 58	70	58	20 3	9 20	294	266	1 22
Sept. 3	Mars		0 17	13 22	110	71	1 1	14 6	200	155	0 44
4	B. A. C. 7550	6	22 2	11 3	23	18	23 5	12 6	275	257	1 3
8	96 Piscium	7	4 30	17 14	91	46	5 26	18 10	208	159	0 56
11	A¹ Tauri	4	20 50	9 24	55	103	21 38	10 12	262	314	0 48
11	A² Tauri	6	20 59	9 33	79	128	21 49	10 23	237	290	0 50
	NEW MOON.										
26	22 Scorpii	5½	17 34	5 9	48	33	18 23	5 58	344	320	0 49
Oct. 6	*o* Piscium	4	21 41	8 36	352	42	22 7	9 2	301	349	0 26
7	*o* Arietis	6	22 25	9 6	105	159	22 57	9 48	191	245	0 42
8	32 Tauri	6	5 27	16 14	26	341	6 22	17 9	294	250	0 55
12	ω¹ Cancri	6	2 6	12 37	104	159	3 6	13 37	259	317	1 0
	NEW MOON.										
Nov. 2	96 Piscium	7	5 39	14 47	121	71	6 10	15 18	183	132	0 31
11	42 Leonis *	6	2 34	11 7	143	188	3 16	11 49	249	298	0 42
13	*b* Virginis	6	6 34	14 58	106	157	7 40	16 4	313	2	1 6
14	Saturn		6 59	15 19	160	211	7 48	16 8	260	309	0 48
	NEW MOON.										
21	3 Sagittarii ‡	5	21 30	5 24	32	350	22 12	6 6	320	274	0 42
25	35 Capricorni	6	21 52	5 31	59	52	23 14	6 52	239	215	0 21
27	ψ² Capricorni ‡	4	3 54	11 24	32	344	4 47	12 17	264	213	0 53
30	*o* Piscium	4	23 16	6 35	45	85	0 26	7 45	239	266	1 10
Dec. 2	B. A C. 1143	6	0 27	7 38	87	142	1 27	8 38	215	265	1 0
2	32 Tauri	6	7 32	14 42	28	331	8 16	15 25	306	249	0 43
5	47 Geminorum	6	4 36	11 34	129	189	5 36	12 34	231	281	1 0
7	B. A. C. 3138	6	4 38	11 28	98	154	5 48	12 38	290	346	1 10
8	η Leonis	3	5 16	12 2	87	141	6 8	12 54	334	28	0 52
	NEW MOON.										
28	29 Arietis ‡	6	8 51	14 19	70	19	9 44	11 15	255	208	0 52
30	62 Tauri	6	5 23	10 43	11	331	6 0	11 20	315	265	0 37

NOTE.—The angles of position are counted from the north point and vertex of the moon's limb, toward the east.
* Whole occultation below the horizon of Washington.
† Immersion below the horizon of Washington.
‡ Emersion below the horizon of Washington.

DOWNES'S TABLE GIVING VALUES OF τ.

FOR COMPUTING THE TIME AND HOUR-ANGLE OF APPARENT CONJUNCTION.

h		Lat. 72°			Lat. 66°			Lat. 60°			Lat. 54°			Lat. 48°			Lat. 42°			Lat. 36°		
		x'			x'			x'			x'			x'			x'			x'		
		.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50
h	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10	2	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	6	5	6	7
	20	3	3	4	4	5	5	5	6	7	6	7	9	8	9	11	9	10	12	11	12	14
	30	5	5	6	6	7	8	8	9	11	10	11	13	12	13	16	14	16	18	16	18	22
	40	6	7	8	8	9	11	11	12	14	13	15	17	16	18	21	18	21	24	21	24	29
	50	7	8	10	10	11	13	13	15	17	16	19	21	19	22	26	22	26	30	26	30	36
1	0	9	10	11	12	14	16	16	18	21	19	22	26	23	26	31	26	31	36	30	35	42
	10	10	12	13	14	16	18	18	21	24	22	26	30	26	30	36	31	35	42	35	40	48
	20	12	13	15	16	18	21	21	23	27	25	29	34	30	34	40	35	40	47	39	45	54
	30	13	15	17	18	20	23	23	26	30	28	32	37	33	38	45	39	44	52	43	50	59
	40	14	16	18	20	22	25	25	29	33	31	35	41	36	42	49	42	48	57	47	54	64
	50	16	18	20	21	24	28	27	31	36	34	38	44	39	45	53	45	52	61	51	58	68
2	0	17	19	22	23	26	30	29	33	39	36	41	47	42	48	56	48	55	65	54	62	72
	10	18	20	23	25	28	32	31	36	41	38	43	50	45	51	59	51	59	68	57	66	76
	20	19	22	24	26	30	34	33	38	43	40	46	53	47	54	62	54	62	71	60	69	80
	30	20	23	26	28	31	36	35	40	45	42	48	55	50	56	65	57	64	74	63	72	83
	40	21	24	27	29	33	37	37	42	47	44	50	58	52	59	68	59	67	77	65	74	86
	50	22	25	28	30	34	39	38	43	49	46	52	60	54	61	70	61	69	79	68	76	88
3	0	23	26	30	31	35	40	40	45	51	48	54	62	56	63	72	63	71	81	70	79	90
	10	24	27	31	33	36	42	41	46	53	49	56	63	57	65	74	65	73	83	72	81	92
	20	25	28	32	34	38	43	42	47	54	51	57	65	59	66	75	66	74	85	73	82	93
	30	26	29	33	35	39	44	43	49	55	52	58	66	60	67	77	68	76	86	74	83	95
	40	26	29	33	36	40	45	44	50	56	53	59	67	61	69	78	69	77	87	75	84	96
	50	27	30	34	36	41	46	45	51	57	54	60	68	62	70	79	70	78	88	76	85	96
4	0	28	31	35	37	41	47	46	52	58	55	61	69	63	70	79	71	79	89	77	86	97
	10	28	31	35	38	42	47	47	52	59	56	62	70	64	71	80	71	79	89	78	86	97
	20	29	32	36	38	42	48	47	53	59	56	62	70	64	71	80	72	80	89	78	87	97
	30	29	32	36	39	43	48	48	53	60	57	63	71	65	72	81	72	80	90	79	87	97
	40	29	33	37	39	43	49	48	53	60	57	63	71	65	72	81	72	80	89	79	87	97
	50	30	33	37	39	44	49	48	54	60	57	63	71	65	72	81	72	80	89	79	87	96
5	0	30	33	37	39	44	49	49	54	60	57	63	71	65	72	80	72	80	89	78	86	95
	10	30	33	37	40	44	49	49	54	60	57	63	71	65	72	80	72	79	88	78	86	95
	20	30	33	37	40	44	49	49	54	60	57	63	71	65	71	79	72	79	88	78	85	94
	30	30	33	37	40	44	49	49	54	60	57	63	70	64	71	79	71	78	87	77	85	93
	40	30	33	37	39	44	49	48	53	59	56	62	70	64	70	78	70	77	86	76	84	91
	50	30	33	37	39	43	48	48	53	59	56	61	69	63	70	77	70	77	85	75	83	90
6	0	30	33	37	39	43	48	48	52	58	55	61	68	63	69	76	69	76	84	74	82	89
	10	30	33	37	39	43	47	47	52	58	55	60	67	62	68	75	68	75	82	73	80	87
	20	29	32	36	38	42	47	47	51	57	54	60	66	61	67	74	67	73	81	72	79	85
	30	29	32	36	38	42	46	46	51	56	53	59	65	60	66	73	66	72	80	71	78	84
	40	29	32	35	37	41	46	45	50	55	53	58	64	59	65	71	65	71	78	70	76	82
	50	28	31	35	37	40	45	45	49	54	52	57	62	58	63	70	63	69	76	68	74	80
7	0	28	31	34	36	40	44	44	48	53	51	55	61	57	62	68	62	68	75	67	73	78
	10	27	30	34	35	39	43	43	47	52	50	54	60	56	61	67	61	66	73	65	71	76
	20	27	30	33	35	38	42	42	46	51	48	53	58	54	59	65	59	65	71	64	69	74
	30	26	29	32	34	37	41	41	45	49	47	52	57	53	58	63	58	63	69	62	67	71
	40	26	28	31	33	36	40	40	44	48	46	50	55	51	56	62	56	61	67			
	50	25	27	31	32	35	39	39	42	47	45	49	53	50	54	60	54	59	65			
8	0	24	27	30	31	34	38	38	41	45	43	47	52	48	52	58	53	57	63			
	10	24	26	29	30	33	37	36	40	44	42	46	50	47	51	56	52	55	60			
	20	23	25	28	29	32	35	35	38	42	40	44	48	45	49	54						
	30	22	24	27	28	31	34	34	37	41	39	42	46	43	47	52						
	40	21	23	26	27	30	33	33	35	39	37	41	44	41	45	49						
	50	20	22	25	26	28	31	31	34	37	36	39	42	40	43	47						
9	0	19	21	24	25	27	30	30	32	35	34	37	40									
	10	18	20	22	24	26	28	28	31	34	32	35	38									
	20	18	19	21	22	24	27	27	29	32	31	33	36									
	30	16	18	20	21	23	25	25	27	30	29	31	34									
	40	15	17	19	20	22	24	24	26	28	27	29	32									

(Concluded at bottom of next page.)

DOWNES'S TABLE GIVING VALUES OF τ.

FOR COMPUTING THE TIME AND HOUR-ANGLE OF APPARENT CONJUNCTION.

h	Lat. 30°			Lat. 24°			Lat. 18°			Lat. 12°			Lat. 6°			Lat. 0°		
	x'			x'			x'			x'			x'			x'		
	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50
h m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
0 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	6	7	8	7	7	9	7	8	9	7	8	10	7	8	10	8	9	11
20	12	14	16	13	14	18	14	16	19	14	16	20	14	17	21	15	18	21
30	17	20	24	19	22	27	20	24	29	21	25	30	21	25	31	22	26	32
40	23	27	32	25	29	36	26	32	39	28	33	40	28	34	41	29	34	42
50	28	33	40	31	36	44	32	39	48	35	40	50	35	42	51	35	42	52
1 0	33	39	47	36	42	52	38	46	56	40	47	59	41	49	60	41	49	61
10	38	45	54	41	48	59	44	52	63	46	54	67	47	56	68	47	56	69
20	43	50	60	46	54	65	49	58	70	52	60	74	53	62	75	53	63	76
30	48	55	66	51	60	71	54	64	76	57	66	79	58	68	81	59	69	82
40	52	60	71	56	65	77	59	69	82	62	72	84	63	73	87	64	74	88
50	56	64	76	60	69	82	64	74	87	66	77	89	68	78	92	68	79	93
2 0	59	68	80	64	73	86	68	78	91	70	81	95	72	83	97	72	83	98
10	62	72	84	67	77	90	71	81	95	74	85	99	75	87	101	76	87	102
20	65	75	87	70	81	94	74	85	99	77	88	103	78	90	105	79	91	106
30	68	78	90	73	84	97	77	88	102	80	91	106	81	93	108	82	94	109
40	71	81	93	76	87	100	80	91	105	83	94	109	84	96	111	85	97	112
50	74	83	96	78	89	102	82	93	107	85	96	111	87	98	113	87	99	114
3 0	76	85	98	80	91	104	84	95	109	87	98	113	89	100	115	89	101	116
10	77	87	99	82	92	106	86	97	111	89	100	114	91	102	116	91	103	117
20	79	89	101	84	94	107	88	99	112	91	102	115	92	104	118	93	104	118
30	80	90	102	85	95	108	89	100	113	92	103	116	94	105	119	94	105	119
40	81	91	103	86	96	109	90	101	114	93	104	117	95	106	119	95	106	120
50	82	92	104	87	97	110	91	101	114	94	104	118	95	106	120	96	107	120
4 0	83	92	104	88	98	110	92	102	114	94	105	118	96	107	120	97	107	120
10	84	93	104	88	98	110	92	102	114	95	105	118	96	107	120	97	107	120
20	84	93	104	89	98	110	92	102	114	95	105	117	96	107	119	97	107	120
30	84	93	104	89	98	110	92	102	114	95	105	117	96	107	119	97	107	119
40	84	93	104	89	98	109	92	102	113	95	104	116	96	106	118	97	107	119
50	84	93	103	88	97	108	92	101	113	94	104	115	96	106	117	96	106	118
5 0	84	92	102	88	97	108	91	101	112	94	103	114	95	105	116	96	105	117
10	83	92	102	88	96	107	91	100	110	93	102	113	95	104	115	95	104	115
20	83	91	101	87	95	106	90	99	109	92	101	112	94	103	114	94	103	114
30	82	90	100	86	94	104	89	98	108	92	100	111	93	102	112	93	102	113
40	81	89	98	85	93	103	88	97	106	91	99	109	92	100	110			
50	80	88	97	84	92	101	87	95	105	89	97	107						
6 0	79	87	95	83	91	100	86	94	103	88	96	105						
10	78	85	94	82	89	98	84	92	101									
20	77	84	92	80	88	96	82	91	99									
30	75	82	90	79	86	94												
40	74	81	88	77	84	92												
50	72	79	86															
7 0	71	77	84															

(*Concluded from preceding page.*)

h	Lat. 72°			Lat. 66°			Lat. 60°			*h*	Lat. 72°			Lat. 66°			Lat. 60°		
	x'			x'			x'				x'			x'			x'		
	.62	.56	.50	.62	.56	.50	.62	.56	.50		.62	.56	.50	.62	.56	.50	.62	.56	.50
h m	m	m	m	m	m	m	m	m	m	h m	m	m	m	m	m	m	m	m	m
9 50	14	16	18	18	20	22	22	24	26	11 0	7	8	8	9	10	11	10	11	12
10 0	13	15	16	17	19	21	20	22	24	10	6	6	7	7	8	9	9	9	10
10	12	14	15	16	17	19	19	21	22	20	5	5	6	6	6	7	7	8	8
20	11	12	14	15	16	17	17	19	20	30	3	4	4	4	5	5			
30	10	11	12	13	14	16	16	17	18	40	2	3	3	3	3	4			
40	9	10	11	12	13	14	14	15	16	50	1	1	1	1	2	2			
50	8	9	10	10	11	12	12	13	14	12 0	0	0	0	0	0	0			

FOR WASHINGTON MEAN NOON.

Date		k	i	θ	L	Date.		k	i	θ	L
			°	°					°	°	
Jan.	1	0.064	150.7	198.8	14.5	July	4	0.839	47.4	5.2	46.4
	6	0.243	121.0	190.6	39.0		9	0.759	58.8	10.6	40.3
	11	0.421	98.7	186.8	46.0		14	0.684	68.4	14.7	36.2
	16	0.566	82.4	183.1	42.7		19	0.613	77.0	18.2	33.3
	21	0.670	70.1	179.2	37.3		24	0.541	85.3	21.2	32.5
	26	0.746	60.6	175.0	32.9		29	0.466	93.9	23.9	31.7
	31	0.803	52.7	170.6	29.7	Aug.	3	0.382	103.7	26.5	30.6
Feb.	5	0.848	45.9	166.0	27.8		8	0.291	114.7	29.4	28.5
	10	0.885	39.6	161.3	26.7		13	0.190	128.3	33.3	23.2
	15	0.920	33.0	156.9	27.4		18	0.090	145.0	40.2	13.6
	20	0.946	27.0	151.3	29.0		23	0.020	163.7	65.6	3.5
	25	0.971	19.7	144.6	32.0		28	0.020	163.7	163.0	3.8
Mar.	1	0.992	10.4	131.7	37.1	Sept.	2	0.121	140.2	190.4	21.3
	6	0.998	4.5	66.9	44.5		7	0.296	114.1	198.3	45.0
	11	0.982	15.6	347.7	54.6		12	0.512	88.6	201.6	63.3
	16	0.918	33.3	337.8	65.3		17	0.728	63.6	207.4	68.7
	21	0.793	54.1	334.5	71.5		22	0.873	41.8	211.3	60.6
	26	0.607	77.7	332.8	66.6		27	0.954	24.4	215.6	49.6
	31	0.410	100.4	331.7	53.0	Oct.	2	0.989	11.9	223.7	40.2
Apr.	5	0.234	122.2	329.8	34.8		7	0.999	2.7	276.1	33.5
	10	0.101	142.9	327.2	16.9		12	0.993	9.5	10.9	29.1
	15	0.021	163.2	318.9	3.8		17	0.984	14.5	19.6	26.5
	20	0.002	175.0	196.0	0.3		22	0.968	20.7	21.6	25.3
	25	0.037	157.7	157.9	6.1		27	0.946	26.8	21.5	25.2
	30	0.108	141.6	153.7	15.5	Nov.	1	0.920	33.0	20.2	26.2
May	5	0.194	127.8	152.3	23.2		6	0.883	39.9	18.3	28.4
	10	0.283	115.8	152.1	28.5		11	0.835	47.9	15.7	32.0
	15	0.370	105.0	152.6	32.0		16	0.775	57.7	12.9	37.8
	20	0.457	94.9	153.7	34.7		21	0.671	70.0	10.0	44.5
	25	0.549	84.4	155.4	38.6		26	0.530	86.4	7.2	51.2
	30	0.648	72.8	157.9	43.7	Dec.	1	0.336	109.2	4.7	49.3
June	4	0.754	59.4	161.6	50.2		6	0.121	139.3	1.4	25.9
	9	0.862	43.6	166.8	58.5		11	0.003	173.5	310.4	0.8
	14	0.955	24.5	175.5	65.6		16	0.085	146.1	201.2	19.0
	19	0.998	5.1	184.4	67.0		21	0.291	114.7	196.4	45.3
	24	0.979	16.7	345.9	61.5		26	0.482	92.0	193.2	49.7
	29	0.917	33.4	358.2	54.5		31	0.629	75.1	189.7	44.6

NOTATION.

k, the ratio of the illuminated portion of the apparent disk to the entire apparent disk considered as the superficies of a circle.

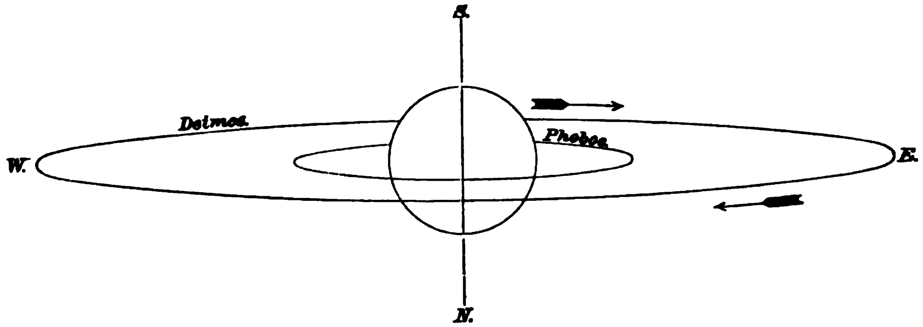
i, the angle between the sun and earth, as seen from the planet.

θ, the angle which the line joining the cusps, or extremities of the illuminated portion, makes with the meridian.

L, the brilliancy of the disk. The unit of *L* is the amount of light received by an eye from a circular disk with the same albedo as the planet, subtending an angular radius of one second of arc, situated at distance unity from the sun, and illuminated by the latter as the mean disk of the planet is illuminated.

FOR WASHINGTON MEAN NOON.

Date.	*k*	*i*	*θ*	*L*	Date.	*k*	*i*	*θ*	*L*
Jan. 1	0.904	36°.1	348°.8	57.5	July 2	0.019	164°.4	24°.2	29.6
6	0.894	37.9	346.8	58.7	4	0.011	168.0	32.1	17.6
11	0.885	39.6	345.0	60.1	6	0.006	171.4	46.9	9.4
16	0.876	41.3	343.3	61.5	8	0.003	173.4	76.1	5.4
21	0.865	43.1	341.7	63.1	10	0.004	173.1	114.1	5.9
26	0.854	44.9	340.4	64.8	12	0.007	170.4	138.7	11.4
31	0.843	46.7	339.4	66.6	14	0.013	166.7	151.1	21.4
Feb. 5	0.831	48.6	338.6	68.5	16	0.022	162.8	158.0	34.7
10	0.818	50.6	338.0	70.6	18	0.033	158.9	162.2	50.3
15	0.804	52.5	337.6	72.8	20	0.047	155.1	164.9	67.6
20	0.790	54.5	337.4	75.2	22	0.061	151.3	167.2	85.3
25	0.775	56.6	337.4	77.8	24	0.078	147.7	168.7	102.6
Mar. 1	0.760	58.7	337.7	80.6	26	0.095	144.5	170.1	118.3
6	0.743	60.9	338.1	83.6	28	0.118	140.8	171.2	134.0
11	0.726	63.1	338.8	87.0	Aug. 2	0.159	133.0	173.6	162.9
16	0.708	65.4	339.7	90.6	7	0.205	126.1	175.7	180.1
21	0.690	67.7	340.8	94.4	12	0.250	120.1	177.8	187.2
26	0.670	70.1	342.2	98.6	17	0.292	114.6	179.9	187.9
31	0.650	72.6	343.7	103.1	22	0.331	109.7	182.0	184.1
Apr. 5	0.629	75.1	345.4	108.2	27	0.369	105.2	184.1	178.0
10	0.606	77.8	347.2	113.7	Sept. 1	0.403	101.1	186.3	170.4
15	0.582	80.5	349.0	119.5	6	0.434	97.5	188.5	161.7
20	0.558	83.4	351.0	125.9	11	0.464	94.1	190.6	153.1
25	0.531	86.4	353.0	132.8	16	0.493	90.8	192.7	145.5
30	0.504	89.6	355.0	140.3	21	0.520	87.7	194.7	138.0
May 5	0.475	92.9	357.0	148.3	26	0.545	84.8	196.7	131.0
10	0.444	96.4	359.0	156.6	Oct. 1	0.570	81.9	198.5	124.6
15	0.411	100.2	0.9	164.8	6	0.594	79.2	200.0	118.6
20	0.376	104.3	2.6	172.6	11	0.616	76.6	201.4	113.0
25	0.339	108.8	4.2	179.2	16	0.637	74.1	202.7	108.0
30	0.298	113.8	5.6	183.6	21	0.657	71.6	203.6	103.2
June 4	0.255	119.3	6.9	183.7	26	0.677	69.3	204.4	98.7
6	0.238	121.7	7.4	182.3	31	0.696	67.0	204.9	94.6
8	0.219	124.1	7.9	179.4	Nov. 5	0.714	64.7	205.2	90.9
10	0.201	126.7	8.4	175.0	10	0.731	62.5	205.2	87.4
12	0.182	129.4	8.9	169.2	15	0.747	60.4	205.0	84.1
14	0.163	132.3	9.4	162.0	20	0.763	58.2	204.5	81.1
16	0.145	135.3	10.0	152.9	25	0.779	55.9	203.6	78.4
18	0.127	138.5	10.6	141.4	30	0.795	53.9	202.6	75.8
20	0.107	141.7	11.3	127.6	Dec. 5	0.807	52.0	201.3	73.3
22	0.089	145.2	12.1	112.3	10	0.820	50.1	199.7	71.0
24	0.072	148.8	13.2	95.9	15	0.833	48.2	197.8	68.9
26	0.057	152.5	14.6	78.8	20	0.845	46.3	195.7	67.0
28	0.042	156.3	16.6	61.4	25	0.857	44.5	193.3	65.1
30	0.030	160.2	19.6	44.6	30	0.868	42.6	190.8	63.4



APPARENT ORBITS OF THE SATELLITES OF MARS DURING THE OPPOSITION OF 1892, AS SEEN IN AN INVERTING TELESCOPE.

The circle represents the disk of the planet and is on the same scale as the orbits. The mean motion of the satellites has been corrected by the observations made during the opposition of 1888.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

PHOBOS.									DEIMOS.					
	d	h		d	h		d	h		d	h		d	h
July	2	10.8 W.	July	24	18.5 W.	Aug.	16	2.2 W.	June	28	19.9 W.	Aug.	5	16.4 W.
	3	13.6 E.		25	21.3 E.		17	5.0 E.		30	17.3 E.		7	13.8 E.
	4	16.4 W.		27	0.1 W.		18	7.8 W.	July	2	14.8 W.		9	11.2 W.
	5	19.2 E.		28	2.9 E.		19	10.6 E.		4	12.2 E.		11	8.6 E.
	6	22.0 W.		29	5.7 W.		20	13.3 W.		6	9.7 W.		13	6.0 W.
	8	0.8 E.		30	8.5 E.		21	16.1 E.		8	7.1 E.		15	3.4 E.
	9	3.5 W.		31	11.2 W.		22	18.9 W.		10	4.5 W.		17	0.9 W.
	10	6.3 E.	Aug.	1	14.0 E.		23	21.7 E.		12	2.0 E.		18	22.3 E.
	11	9.1 W.		2	16.8 W.		25	0.5 W.		13	23.4 W.		20	19.7 W.
	12	11.9 E.		3	19.6 E.		26	3.3 E.		15	20.9 E.		22	17.1 E.
	13	14.7 W.		4	22.4 W.		27	6.1 W.		17	18.3 W.		24	14.5 W.
	14	17.5 E.		6	1.2 E.		28	8.8 E.		19	15.7 E.		26	12.0 E.
	15	20.3 W.		7	3.9 W.		29	11.6 W.		21	13.1 W.		28	9.4 W.
	16	23.1 E.		8	6.7 E.		30	14.4 E.		23	10.5 E.		30	6.9 E.
	18	1.8 W.		9	9.5 W.		31	17.2 W.		25	7.9 W.	Sept.	1	4.3 W.
	19	4.6 E.		10	12.3 E.	Sept.	1	20.0 E.		27	5.4 E.		3	1.7 E.
	20	7.4 W.		11	15.1 W.		2	22.8 W.		29	2.8 W.		4	23.2 W.
	21	10.2 E.		12	17.9 E.		4	1.6 E.		31	0.2 E.		6	20.6 E.
	22	13.0 W.		13	20.6 W.		5	4.4 W.	Aug.	1	21.6 W.		8	18.1 W.
	23	15.8 E.		14	23.4 E.		6	7.1 E.		3	19.0 E.		10	15.5 E.

Date.		Position Angle.	Distance.	Date.		Position Angle.	Distance.
	d	° ′	″		d	° ′	″
July	2	87 33	28.2	June	28	88 10	69.1
Aug.	4	90 22	34.4	Aug.	4	90 52	85.7
Sept.	6	93 48	29.5	Sept.	8	94 10	72.4

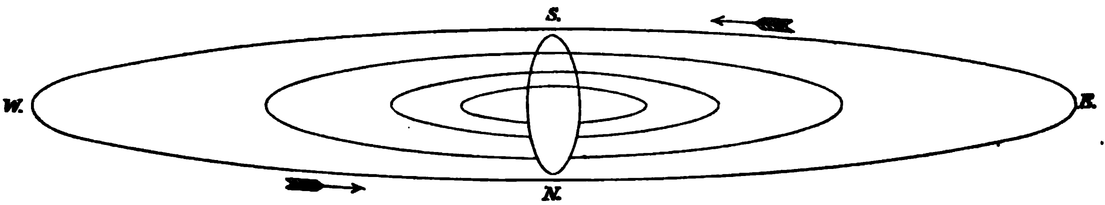
For Phobos every seventh eastern and western elongation is given, and for Deimos every third; the intermediate ones may be found by adding the periodic time of each satellite.

Periodic time of Phobos, $7^h\ 39^m\ 13^s.94$. Periodic time of Deimos, $30^h\ 17^m\ 54^s.38$.

APPARENT DISK OF MARS.

January	0,	0.937	May	30,	0.896	September	27,	0.906
	31,	0.911	June	29,	0.967	October	27,	0.871
March	1,	0.891	July	29,	0.998	November	26,	0.862
	31,	0.877	August	28,	0.970	December	26,	0.871
April	30,	0.875						

The numbers in this table are the versed-sines of the illuminated disk, the apparent diameter of the planet being taken as unity.



APPARENT ORBITS OF THE SATELLITES OF JUPITER IN 1892,
AS SEEN IN AN INVERTING TELESCOPE.

(THE VERTICAL SCALE IS THREE TIMES THE HORIZONTAL ONE.)

The object of this figure is to facilitate the identification of the satellites in cases where the diagrams of configurations do not suffice for that purpose: reference to the above diagram enables one to identify the inner and outer satellite of the pair. The central, vertical ellipse represents the disk of Jupiter, elongated three times in the vertical direction to correspond to the representation of the orbits of the satellites.

Facing each page of the phenomena of Jupiter's satellites, pages 458—479, is the page of diagrams of configurations, for the same month. The light disks ○ in the vertical row in the middle of the page represent the relative position of Jupiter each day. The dots adjacent in the same horizontal space represent the positions of the several satellites on the same day, at the hour and minute of Washington mean time indicated above the diagrams. The latitudes of the satellites are always considered zero in constructing the diagrams, except where two or more satellites chance to be at nearly the same distance from the planet, when they are placed one above the other according to their apparent latitudes. The numerals designating the satellites are placed on the right or left hand side of the dot, according as the motion of the satellite, for the time of the configuration, is toward the east or toward the west—the motion being always toward the numeral. Frequently, at the epoch of the configuration, one or more satellites will be invisible, being projected on the disk of the planet: this phenomenon is indicated by a light disk ○ at the left hand side of the page. Frequently, also, one or more satellites will be invisible, being concealed in occultation behind the disk, or eclipsed in the shadow of the planet: this phenomenon is indicated by a dark disk ● at the right hand side of the page. In both cases, the annexed numeral serves to point out which satellite is thus rendered invisible.

When an observation is made at a different hour from that for which the diagram is constructed, the motion of the satellite during the interval may be judged by transferring its given position to the above diagram, and estimating its motion during the elapsed interval on the above diagram of the orbits, by means of the following table of the periods:—

MEAN SYNODIC PERIODS OF THE SATELLITES.

	d	h	m	s		d
I.	1	18	28	35.945	=	1.76986048
II.	3	13	17	53.735	=	3.55409416
III.	7	3	59	35.854	=	7.16638720
IV.	16	18	5	6.928	=	16.75355241

WASHINGTON MEAN TIMES OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE I.

		h m			h m			h m			h m
Jan.	1	23 3.6	May	13	18 59.3	Aug.	1	10 48.6	Oct.	18	6 18.9
	3	17 33.5		15	13 29.3		3	5 16.4		20	0 44.8
	5	12 3.5		17	7 59.3		4	23 44.2		21	19 10.9
	7	6 33.3		19	2 29.2		6	18 11.8		23	13 36.9
	9	1 3.3		20	20 59.2		8	12 39.5		25	8 3.1
	10	19 33.4		22	15 29.1		10	7 7.0		27	2 29.2
	12	14 3.5		24	9 58.9		12	1 34.5		28	20 55.4
	14	8 33.6		26	4 28.7		13	20 1.9		30	15 21.6
	16	3 3.7		27	22 58.5		15	14 29.3	Nov.	1	9 48.0
	17	21 33.8		29	17 28.2		17	8 56.5		3	4 14.3
	19	16 4.0		31	11 58.0		19	3 23.9		4	22 40.7
	21	10 34.2	June	2	6 27.6		20	21 51.0		6	17 7.1
	23	5 4.4		4	0 57.3		22	16 18.0		8	11 33.6
	24	23 34.7		5	19 26.8		24	10 45.1		10	6 0.1
	26	18 5.0		7	13 56.3		26	5 12.1		12	0 26.8
	28	12 35.3		9	8 25.9		27	23 39.0		13	18 53.5
	30	7 5.5		11	2 55.3		29	18 5.8		15	13 20.3
Feb.	1	1 35.9		12	21 24.7		31	12 32.5		17	7 47.1
	2	20 6.4		14	15 54.1	Sept.	2	6 59.2		19	2 14.1
	4	14 36.7		16	10 23.5		4	1 25.7		20	20 41.1
	6	9 7.0		18	4 52.9		5	19 52.4		22	15 8.2
	8	3 37.5		19	23 22.2		7	14 18.9		24	9 35.2
	9	22 8.0		21	17 51.4		9	8 45.3		26	4 2.5
	11	16 38.4		23	12 20.6		11	3 11.6		27	22 29.8
	13	11 8.9		25	6 49.7		12	21 38.0		29	16 57.2
	15	5 39.4		27	1 18.8		14	16 4.2	Dec.	1	11 24.6
	17	0 9.8		28	19 47.7		16	10 30.5		3	5 52.1
	18	18 40.3		30	14 16.7		18	4 56.7		5	0 19.7
	20	13 10.8	July	2	8 45.6		19	23 22.9		6	18 47.5
	22	7 41.4		4	3 14.5		21	17 49.0		8	13 15.1
April	17	5 26.4		5	21 43.3		23	12 15.1		10	7 43.1
	18	23 56.8		7	16 12.1		25	6 41.2		12	2 11.0
	20	18 27.2		9	10 40.8		27	1 7.3		13	20 39.0
	22	12 57.5		11	5 9.4		28	19 33.2		15	15 7.0
	24	7 27.8		12	23 38.0		30	13 59.3		17	9 35.3
	26	1 58.0		14	18 6.6	Oct.	2	8 25.3		19	4 3.4
	27	20 28.2		16	12 35.2		4	2 51.2		20	22 31.7
	29	14 58.4		18	7 3.6		5	21 17.1		22	17 0.1
May	1	9 28.6		20	1 31.9		7	15 43.2		24	11 28.5
	3	3 58.9		21	20 0.1		9	10 9.2		26	5 57.0
	4	22 29.0		23	14 28.3		11	4 35.2		28	0 25.7
	6	16 59.1		25	8 56.6		12	23 0.9		29	18 54.4
	8	11 29.1		27	3 24.7		14	17 26.9		31	13 23.2
	10	5 59.2		28	21 52.8		16	11 52.8			
	12	0 29.3		30	16 20.7						

WASHINGTON MEAN TIMES OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE II.

		h m			h m			h m			h m
Jan.	1	14 14.5	May	8	17 46.3	July	29	12 43.5	Oct.	15	14 13.8
	5	3 38.2		12	7 11.5	Aug.	2	1 58.3		19	3 20.2
	8	17 1.3		15	20 35.7		5	15 12.7		22	16 26.9
	12	6 25.7		19	10 0.4		9	4 26.6		26	5 33.8
	15	19 49.5		22	23 24.0		12	17 39.7		29	18 41.0
	19	9 14.6		26	12 47.9		16	6 52.2	Nov.	2	7 48.5
	22	22 39.0		30	2 11.0		19	20 4.1		5	20 56.6
	26	12 4.6	June	2	15 34.3		23	9 15.6		9	10 5.1
	30	1 29.5		6	4 56.7		26	22 26.4		12	23 13.8
Feb.	2	14 55.6		9	18 19.2		30	11 36.7		16	12 23.1
	6	4 20.9		13	7 40.7	Sept.	3	0 46.3		20	1 33.2
	9	17 47.4		16	21 2.5		6	13 55.5		23	14 43.7
	13	7 13.0		20	10 23.2		10	3 4.2		27	3 54.9
	16	20 39.9		23	23 44.1		13	16 12.4		30	17 6.6
	20	10 5.8		27	13 4.1		17	5 20.2	Dec.	4	6 18.9
	23	23 32.8	July	1	2 24.1		20	18 27.6		7	19 32.1
				4	15 43.0		24	7 34.9		11	8 45.7
April	17	9 13.0		8	5 2.0		27	20 41.7		14	22 0.0
	20	22 39.5		11	18 20.1	Oct.	1	9 48.2		18	11 14.8
	24	12 4.8		15	7 38.1		4	22 54.8		22	0 30.4
	28	1 30.9		18	20 55.0		8	12 1.1		25	13 46.6
May	1	14 56.0		22	10 11.8		12	1 7.5		29	3 3.7
	5	4 21.8		25	23 27.8						

SATELLITE III.

		h m			h m			h m			h m
Jan.	6	6 24.6	May	14	15 7.3	Aug.	1	12 57.1	Oct.	19	2 58.7
	13	10 45.6		21	19 31.3		8	16 44.9		26	6 14.1
	20	15 9.5		28	23 53.3		15	20 27.5	Nov.	2	9 32.7
	27	19 35.2	June	5	4 12.7		23	0 5.8		9	12 54.5
Feb.	4	0 3.3		12	8 29.9		30	3 38.6		16	16 21.0
	11	4 31.9		19	12 44.8	Sept.	6	7 6.8		23	19 51.5
	18	9 1.8		26	16 56.3		13	10 31.0		30	23 27.2
			July	3	21 4.8		20	13 51.7	Dec.	8	3 7.3
April	23	1 44.3		11	1 9.2		27	17 10.2		15	6 52.7
	30	6 13.3		18	5 9.5	Oct.	4	20 26.6		22	10 43.1
May	7	10 40.8		25	9 5.5		11	23 42.4		29	14 38.1

SATELLITE IV.

		h m			h m			h m			h m
Jan.	6	7 35.9	May	20	5 38.2	Aug.	12	3 16.9	Nov.	3	5 10.8
	23	3 45.3	June	6	1 44.4		28	19 20.6		19	19 52.8
Feb.	9	0 20.6		22	21 17.4	Sept.	14	10 28.1	Dec.	6	11 57.2
			July	9	16 9.3	Oct.	1	0 50.8		23	4 54.9
May	3	9 8.1		26	10 11.9		17	14 54.8			

WASHINGTON MEAN TIME.

JANUARY.

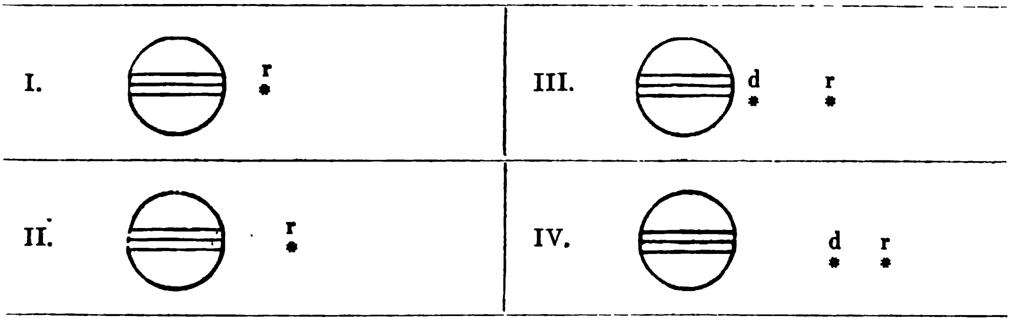
d	h	m	s			
1	0	34		I.	Tr.	In.
	1	46		I.	Sh.	In.
	2	53		I.	Tr.	Eg.
	4	3		I.	Sh.	Eg.
	12	48		II.	Oc.	Dis.
	18	1	14.5	II.	Ec.	Re.
	21	54		I.	Oc.	Dis.
2	1	21	4.6	I.	Ec.	Re.
	14	35		III.	Tr.	In.
	18	1		III.	Tr.	Eg.
	19	4		I.	Tr.	In.
	19	29		III.	Sh.	In.
	20	15		I.	Sh.	In.
	21	22		I.	Tr.	Eg.
	22	32		I.	Sh.	Eg.
	22	40		III.	Sh.	Eg.
3	7	56		II.*	Tr.	In.
	10	21		II.	Sh.	In.
	10	49		II.	Tr.	Eg.
	13	9		II.	Sh.	Eg.
	16	24		I.	Oc.	Dis.
	19	49	58.0	I.	Ec.	Re.
4	13	34		I.	Tr.	In.
	14	44		I.	Sh.	In.
	15	52		I.	Tr.	Eg.
	17	1		I.	Sh.	Eg.
5	2	12		II.	Oc.	Dis.
	7	20	38.5	II.*	Ec.	Re.
	10	54		I.	Oc.	Dis.
	14	18	46.8	I.	Ec.	Re.
6	4	42		III.	Oc.	Dis.
	5	33		IV.*	Oc.	Dis.
	8	4		I.*	Tr.	In.
	8	7		III.*	Oc.	Re.
	9	13		I.	Sh.	In.
	9	33	34.1	III.	Ec.	Dis.
	9	37		IV.	Oc.	Re.
	10	22		I.	Tr.	Eg.
	11	30		I.	Sh.	Eg.
	12	32	36.5	III.	Ec.	Re.
	17	0	34.5	IV.	Ec.	Dis.
	19	43	57.9	IV.	Ec.	Re.
	21	19		II.	Tr.	In.
	23	40		II.	Sh.	In.
7	0	12		II.	Tr.	Eg.
	2	28		II.	Sh.	Eg.
	5	24		I.*	Oc.	Dis.
	8	47	37.4	I.*	Ec.	Re.
8	2	34		I.	Tr.	In.
	3	42		I.	Sh.	In.
	4	52		I.	Tr.	Eg.
	5	59		I.*	Sh.	Eg.
	15	35		II.	Oc.	Dis.
	20	39	18.6	II.	Ec.	Re.
	23	54		I.	Oc.	Dis.
9	3	16	25.6	I.	Ec.	Re.
	18	58		III.	Tr.	In.
	21	4		I.	Tr.	In.
	22	11		I.	Sh.	In.
	22	21		III.	Tr.	Eg.
	23	22		I.	Tr.	Eg.
	23	32		III.	Sh.	In.
10	0	28		I.	Sh.	Eg.
	2	42		III.	Sh.	Eg.
	10	42		II.*	Tr.	In.
	12	59		II.	Sh.	In.
	13	35		II.	Tr.	Eg.
	15	47		II.	Sh.	Eg.
	18	24		I.	Oc.	Dis.
	21	45	17.9	I.	Ec.	Re.
11	34	15		I.	Tr.	In.
11	16	40		I.	Sh.	In.
	17	52		I.	Tr.	Eg.
	18	57		I.	Sh.	Eg.
12	4	59		II.	Oc.	Dis.
	9	58	47.0	II.	Ec.	Re.
	12	54		I.	Oc.	Dis.
	16	14	5.8	I.	Ec.	Re.
13	9	3		III.	Oc.	Dis.
	10	4		I.	Tr.	In.
	11	9		I.	Sh.	In.
	12	22		I.	Tr.	Eg.
	12	28		III.	Oc.	Re.
	13	26		I.	Sh.	Eg.
	13	35	42.4	III.	Ec.	Dis.
	16	33	35.4	III.	Ec.	Re.
14	0	5		II.	Tr.	In.
	2	17		II.	Sh.	In.
	2	57		II.	Tr.	Eg.
	5	5		II.*	Sh.	Eg.
	7	24		I.*	Oc.	Dis.
	10	42	55.1	I.	Ec.	Re.
	17	26		IV.	Tr.	In.
	21	25		IV.	Tr.	Eg.
15	3	46		IV.	Sh.	In.
	4	35		I.	Tr.	In.
	5	38		I.*	Sh.	In.
	6	45		IV.*	Sh.	Eg.
	6	53		I.*	Tr.	Eg.
	7	55		I.*	Sh.	Eg.
	18	23		II.	Oc.	Dis.
	23	17	27.2	II.	Ec.	Re.
16	1	54		I.	Oc.	Dis.
	5	11	42.4	I.*	Ec.	Re.
	23	5		I.	Tr.	In.
	23	19		III.	Tr.	In.
17	0	7		I.	Sh.	In.
	1	23		I.	Tr.	Eg.
	2	24		I.	Sh.	Eg.
	2	43		III.	Tr.	Eg.
	3	35		III.	Sh.	In.
	6	43		III.*	Sh.	Eg.
	13	29		II.	Tr.	In.
	15	36		II.	Sh.	In.
	16	21		II.	Tr.	Eg.
	18	24		II.	Sh.	Eg.
	20	25		I.	Oc.	Dis.
	23	40	33.2	I.	Ec.	Re.
18	17	35		I.	Tr.	In.
	18	36		I.	Sh.	In.
	19	53		I.	Tr.	Eg.
	20	53		I.	Sh.	Eg.
19	7	49		II.*	Oc.	Dis.
	12	36	59.2	II.	Ec.	Re.
	14	55		I.	Oc.	Dis.
	18	9	20.1	I.	Ec.	Re.
20	12	6		I.	Tr.	In.
	13	5		I.	Sh.	In.
	13	28		III.	Oc.	Dis.
	14	24		I.	Tr.	Eg.
	15	22		I.	Sh.	Eg.
	16	51		III.	Oc.	Re.
	17	38	16.1	III.	Ec.	Dis.
	20	34	58.5	III.	Ec.	Re.
21	2	52		II.	Tr.	In.
	4	54		II.	Sh.	In.
	5	44		II.*	Tr.	Eg.
	7	41		II.*	Sh.	Eg.
	9	25		I.	Oc.	Dis.
	12	38	8.0	I.	Ec.	Re.
22	6	36		I.*	Tr.	In.
22	7	34		I.*	Sh.	In.
	8	54		I.*	Tr.	Eg.
	9	51		I.	Sh.	Eg.
	21	13		II.	Oc.	Dis.
23	1	47		IV.	Oc.	Dis.
	1	55	39.1	II.	Ec.	Re.
	3	55		I.	Oc.	Dis.
	5	43		IV.*	Oc.	Re.
	7	6	53.9	I.*	Ec.	Re.
	11	22	32.0	IV.	Ec.	Dis.
	13	53	10.8	IV.	Ec.	Re.
24	1	6		I.	Tr.	In.
	2	3		I.	Sh.	In.
	3	24		I.	Tr.	Eg.
	3	45		III.	Tr.	In.
	4	20		I.	Sh.	Eg.
	7	8		III.*	Tr.	Eg.
	7	38		III.*	Sh.	In.
	10	45		III.	Sh.	Eg.
	16	16		II.	Tr.	In.
	18	12		II.	Sh.	In.
	19	8		II.	Tr.	Eg.
	20	59		II.	Sh.	Eg.
	22	26		I.	Oc.	Dis.
25	1	35	43.3	I.	Ec.	Re.
	19	37		I.	Tr.	In.
	20	31		I.	Sh.	In.
	21	55		I.	Tr.	Eg.
	22	48		I.	Sh.	Eg.
26	10	38		II.	Oc.	Dis.
	15	15	13.8	II.	Ec.	Re.
	16	56		I.	Oc.	Dis.
	20	4	29.5	I.	Ec.	Re.
27	14	7		I.	Tr.	In.
	15	0		I.	Sh.	In.
	16	25		I.	Tr.	Eg.
	17	17		I.	Sh.	Eg.
	17	54		III.	Oc.	Dis.
	21	17		III.	Oc.	Re.
	21	40	38.8	III.	Ec.	Dis.
28	0	36	9.4	III.	Ec.	Re.
	5	40		II.*	Tr.	In.
	7	30		II.*	Sh.	In.
	8	31		II.*	Tr.	Eg.
	10	17		II.	Sh.	Eg.
	11	26		I.	Oc.	Dis.
	14	33	16.1	I.	Ec.	Re.
29	8	38		I.*	Tr.	In.
	9	29		I.	Sh.	In.
	10	56		I.	Tr.	Eg.
	11	46		I.	Sh.	Eg.
30	0	4		II.	Oc.	Dis.
	4	33	53.1	II.	Ec.	Re.
	5	56		I.*	Oc.	Dis.
	9	2	0.9	I.*	Ec.	Re.
31	3	8		I.	Tr.	In.
	3	58		I.	Sh.	In.
	5	26		I.*	Tr.	Eg.
	6	15		I.*	Sh.	Eg.
	8	12		III.*	Tr.	In.
	11	35		III.	Tr.	Eg.
	11	40		III.	Sh.	In.
	13	54		IV.	Tr.	In.
	14	46		III.	Sh.	Eg.
	17	44		IV.	Tr.	Eg.
	19	4		II.	Tr.	In.
	20	48		II.	Sh.	In.
	21	55		II.	Tr.	Eg.
	22	9		IV.	Sh.	In.
	23	35		II.	Sh.	Eg.

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

JANUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 7ʰ for an Inverting Telescope.

Day.	West.		East.
1	4· 2 1·	○	· 3·
2	·4	○	3· ·1 ·2
3	·4 3· ·1	○	2·
4	·4 3· ·2	○	1·
5	·3 ·4 ·1	○	·2
6		○	1· 2· ·3● ·4●
7	2·	○	·4 ·3 ·1●
8	·2 1·	○	3· ·4
9		○	·1 3· ·2 ·4
10	1· 3·	○	2· ·4
11	3· 2·	○	1· 4·
12	·3 ·1	○	4· ·2●
13	·3	○	1· 2· 4·
14	2· ·1	○	4· ·3
15	·2 4· 1·	○	3·
16	4·	○	·1 ·2 3·
17	4· 1· 3·	○	2·
18	4· 3· 2·	○	·1
19	·4 ·3 ·1 ·2	○	
20	·4 ·3	○	1· 2·
21	·4 ·1 2·	○	·3
22	○ 1· ·4 ·2	○	·3
23		○	·4 ·1 ·2 3·
24	○ 3· 1·	○	2· ·4
25	3· 2·	○	·1 ·4
26	·3 1· ·2	○	·4
27	·3	○	1· ·2 ·4
28	○ 2· ·1	○	·3 4·
29	·2	○	1· ·3 4·
30		○	·2 3· 4· ·1●
31	1·	○	3· 4· 2·

WASHINGTON MEAN TIME.

FBBRUARY.

d	h	m	s			
1	0	27		I.	Oc.	Dis.
	0	55		IV.	Sh.	Eg.
	3	30	48.9	I.	Ec.	Re.
	21	39		I.	Tr.	In.
	22	27		I.	Sh.	In.
	23	57		I.	Tr.	Eg.
2	0	44		I.	Sh.	Eg.
	13	30		II.	Oc.	Dis.
	17	53	30.1	II.	Ec.	Re.
	18	57		I.	Oc.	Dis.
	21	59	33.8	I.	Ec.	Re.
3	16	9		I.	Tr.	In.
	16	56		I.	Sh.	In.
	18	27		I.	Tr.	Eg.
	19	13		I.	Sh.	Eg.
	22	23		III.	Oc.	Dis.
4	1	44		III.	Oc.	Re.
	1	43	30.4	III.	Ec.	Dis.
	4	37	48.6	III.	Ec.	Re.
	8	29		II. *	Tr.	In.
	10	6		II.	Sh.	In.
	11	20		II.	Tr.	Eg.
	12	53		II.	Sh.	Eg.
	13	28		I.	Oc.	Dis.
	16	28	19.0	I.	Ec.	Re.
5	10	40		I.	Tr.	In.
	11	25		I.	Sh.	In.
	12	58		I.	Tr.	Eg.
	13	42		I.	Sh.	Eg.
6	2	55		II.	Oc.	Dis.
	7	12	8.6	II. *	Ec.	Re.
	7	58		I.	Oc.	Dis.
	10	57	2.5	I.	Ec.	Re.
7	5	10		I.	Tr.	In.
	5	54		I. *	Sh.	In.
	7	28		I. *	Tr.	Eg.
	8	11		I.	Sh.	Eg.
	12	41		III.	Tr.	In.
	15	43		III.	Sh.	In.
	16	1		III.	Tr.	Eg.
	18	48		III.	Sh.	Eg.
	21	54		II.	Tr.	In.
	23	24		II.	Sh.	In.
8	0	45		II.	Tr.	Eg.
	2	11		II.	Sh.	Eg.
	2	28		I.	Oc.	Dis.
	5	25	49.0	I. *	Ec.	Re.
	22	29		IV.	Oc.	Dis.
8	23	41		I.	Tr.	In.
9	0	23		I.	Sh.	In.
	1	59		I.	Tr.	Eg.
	2	12		IV.	Oc.	Re.
	2	40		I.	Sh.	Eg.
	5	44	58.6	IV. *	Ec.	Dis.
	8	1	21.0	IV.	Ec.	Re.
	16	22		II.	Oc.	Dis.
	20	31	47.0	II.	Ec.	Re.
	20	59		I.	Oc.	Dis.
	23	54	32.8	I.	Ec.	Re.
10	18	11		I.	Tr.	In.
	18	52		I.	Sh.	In.
	20	29		I.	Tr.	Eg.
	21	9		I.	Sh.	Eg.
11	2	53		III.	Oc.	Dis.
	8	38	44.5	III.	Ec.	Re.
	11	19		II.	Tr.	In.
	12	42		II.	Sh.	In.
	14	10		II.	Tr.	Eg.
	15	28		II.	Sh.	Eg.
	15	29		I.	Oc.	Dis.
	18	23	16.5	I.	Ec.	Re.
12	12	42		I.	Tr.	In.
	13	21		I.	Sh.	In.
	15	0		I.	Tr.	Eg.
	15	38		I.	Sh.	Eg.
13	5	48		II. *	Oc.	Dis.
	9	50	24.1	II.	Ec.	Re.
	10	0		I.	Oc.	Dis.
	12	51	58.7	I.	Ec.	Re.
14	7	13		I. *	Tr.	In.
	7	50		I.	Sh.	In.
	9	31		I.	Tr.	Eg.
	10	7		I.	Sh.	Eg.
	17	12		III.	Tr.	In.
	19	45		III.	Sh.	In.
	20	30		III.	Tr.	Eg.
	22	49		III.	Sh.	Eg.
15	0	44		II.	Tr.	In.
	2	0		II.	Sh.	In.
	3	34		II.	Tr.	Eg.
	4	30		I.	Oc.	Dis.
	4	46		II.	Sh.	Eg.
	7	20	43.9	I. *	Ec.	Re.
16	1	43		I.	Tr.	In.
	2	19		I.	Sh.	In.
	4	1		I.	Tr.	Eg.
16	4	36		I.	Sh.	Eg.
	19	15		II.	Oc.	Dis.
	23	1		I.	Oc.	Dis.
	23	10	3.3	II.	Ec.	Re.
17	1	49	26.6	I.	Ec.	Re.
	10	47		IV.	Tr.	In.
	14	22		IV.	Tr.	Eg.
	16	32		IV.	Sh.	In.
	19	3		IV.	Sh.	Eg.
	20	14		I.	Tr.	In.
	20	48		I.	Sh.	In.
	22	32		I.	Tr.	Eg.
	23	5		I.	Sh.	Eg.
18	7	23		III. *	Oc.	Dis.
	12	39	31.3	III.	Ec.	Re.
	14	9		II.	Tr.	In.
	15	18		II.	Sh.	In.
	16	59		II.	Tr.	Eg.
	17	31		I.	Oc.	Dis.
	18	4		II.	Sh.	Eg.
	20	18	9.0	I.	Ec.	Re.
19	14	45		I.	Tr.	In.
	15	17		I.	Sh.	In.
	17	3		I.	Tr.	Eg.
	17	34		I.	Sh.	Eg.
20	8	41		II.	Oc.	Dis.
	12	2		I.	Oc.	Dis.
	12	28	38.9	II.	Ec.	Re.
	14	46	50.3	I.	Ec.	Re.
21	9	15		I.	Tr.	In.
	9	46		I.	Sh.	In.
	11	33		I.	Tr.	Eg.
	12	3		I.	Sh.	Eg.
	21	44		III.	Tr.	In.
	23	48		III.	Sh.	In.
22	1	1		III.	Tr.	Eg.
	2	51		III.	Sh.	Eg.
	3	34		II.	Tr.	In.
	4	36		II.	Sh.	In.
	6	24		II. *	Tr.	Eg.
	6	33		I. *	Oc.	Dis.
	7	21		II. *	Sh.	Eg.
	9	15	33.7	I.	Ec.	Re.
23	3	46		I.	Tr.	In.
	4	14		I.	Sh.	In.
	6	4		I. *	Tr.	Eg.
	6	31		I. *	Sh.	Eg.
	22	8		II.	Oc.	Dis.

THE SATELLITES OF JUPITER

ARE INVISIBLE FROM FEBRUARY 24 UNTIL APRIL 17,

JUPITER BEING TOO NEAR THE SUN.

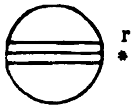
Note.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse. Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

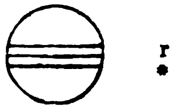
FEBRUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

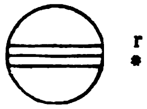
I.



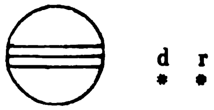
III.



II.



IV.



Configurations at 6h 30m for an Inverting Telescope.

Day.	West.		East.
1	3· 2 4·	○	·1
2	4· ·3 1· ·2	○	
3	4· ·3	○	·1 ·2
4	4· ·1	○	2· ·3
5	·4 2·	○	1· ·3
6	·4 ·1	○	·2 3·
7	○ 1· ·4	○	3· 2·
8	3· ·4 2·	○	·1
9	3· ·2 1·	○	·4
10	·3	○	·1 ·2 ·4
11	·1	○	·3 2· ·4
12	2·	○	1· ·3 ·4
13	·1	○	3· 4· ·2 ●
14		○	1· 3· 2· 4·
15	3· 2·	○	4· ·1 ●
16	3· ·2 1·	○	4·
17	·3	○	4· ·1 ·2
18	4· 1· ·3	○	2·
19	4· 2·	○	1· ·3
20	4· ·1 ·2	○	3·
21	4·	○	1· 3· ·2
22	·4 3· ·1 2·	○	
23	·4 3· ·2 1·	○	
24	·4 ·3	○	·1·2

WASHINGTON MEAN TIME.

APRIL.

THE SATELLITES OF JUPITER

ARE INVISIBLE FROM FEBRUARY 24 UNTIL APRIL 17,

JUPITER BEING TOO NEAR THE SUN.

d	h	m	s			
17	3	52	1.5	I.	Ec.	Dis.
	6	35		I.	Oc.	Re.
	6	54	11.0	II.	Ec.	Dis.
	10	34		II.	Oc.	Re.
18	1	7		I.	Sh.	In.
	1	37		I.	Tr.	In.
	3	23		I.	Sh.	Eg.
	3	53		I.	Tr.	Eg.
	22	20	35.2	I.	Ec.	Dis.
19	1	5		I.	Oc.	Re.
	1	18		II.	Sh.	In.
	2	21		II.	Tr.	In.
	4	1		II.	Sh.	Eg.
	5	3		II.	Tr.	Eg.
	8	7		III.	Sh.	In.
	10	12		III.	Tr.	In.
	10	59		III.	Sh.	Eg.
	13	7		III.	Tr.	Eg.
	19	36		I.	Sh.	In.
	20	8		I.	Tr.	In.
	21	52		I.	Sh.	Eg.
	22	24		I.	Tr.	Eg.
20	16	49	10.8	I. *	Ec.	Dis.
	19	35		I.	Oc.	Re.
	20	13	38.0	II.	Ec.	Dis.
21	0	1		II.	Oc.	Re.
	14	5		I.	Sh.	In.
	14	39		I.	Tr.	In.
	16	21		I. *	Sh.	Eg.
	16	55		I. *	Tr.	Eg.
22	11	17	43.2	I.	Ec.	Dis.
	14	5		I.	Oc.	Re.
	14	36		II.	Sh.	In.
	15	46		II.	Tr.	In.
	17	18		II. *	Sh.	Eg.
	18	28		II.	Tr.	Eg.
	22	2	50.5	III.	Ec.	Dis.
23	3	11		III.	Oc.	Re.
	8	33		I.	Sh.	In.
	9	9		I.	Tr.	In.
	10	49		I.	Sh.	Eg.
	11	25		I.	Tr.	Eg.
24	5	46	16.2	I.	Ec.	Dis.
	8	36		I.	Oc.	Re.
	9	32	1.3	II.	Ec.	Dis.
	13	26		II.	Oc.	Re.
	18	10		IV.	Sh.	In.
	19	24		IV.	Sh.	Eg.
	23	50		IV.	Tr.	In.
25	1	14		IV.	Tr.	Eg.
	3	2		I.	Sh.	In.
	3	39		I.	Tr.	In.
	5	18		I.	Sh.	Eg.
	5	55		I.	Tr.	Eg.
26	0	14	48.8	I.	Ec.	Dis.
	3	6		I.	Oc.	Re.
	3	53		II.	Sh.	In.
	5	11		II.	Tr.	In.
	6	35		II.	Sh.	Eg.
	7	52		II.	Tr.	Eg.
26	12	8		III.	Sh.	In.
	14	43		III.	Tr.	In.
	14	59		III.	Sh.	Eg.
	17	35		III.	Tr.	Eg.
	21	30		I.	Sh.	In.
	22	9		I.	Tr.	In.
	23	46		I.	Sh.	Eg.
27	0	25		I.	Tr.	Eg.
	18	43	23.7	I.	Ec.	Dis.
	21	36		I.	Oc.	Re.
	22	51	22.5	II.	Ec.	Dis.
28	2	52		II.	Oc.	Re.
	15	59		I.	Sh.	In.
	16	39		I. *	Tr.	In.
	18	15		I.	Sh.	Eg.
	18	55		I.	Tr.	Eg.
29	13	11	54.9	I.	Ec.	Dis.
	16	6		I.	Oc.	Re.
	17	10		II. *	Sh.	In.
	18	35		II.	Tr.	In.
	19	52		II.	Sh.	Eg.
	21	16		II.	Tr.	Eg.
30	2	4	31.4	III.	Ec.	Dis.
	4	43	21.4	III.	Ec.	Re.
	4	48		III.	Oc.	Dis.
	7	38		III.	Oc.	Re.
	10	28		I.	Sh.	In.
	11	10		I.	Tr.	In.
	12	43		I.	Sh.	Eg.
	13	26		I.	Tr.	Eg.

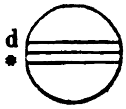
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

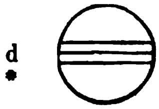
APRIL.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

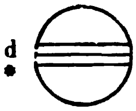
I.



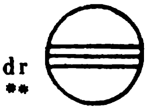
III.



II.



IV.



Configurations at 16ʰ for an Inverting Telescope.

Day.	West.		East.
17		○	·2 1· ·4 ·3
18	·1	○	2· 3· ·4
19	2· 3·	○	1· ·4
20	3· ·2 ·1	○	·4
21	○ 1· ·3	○	·2 4·
22	○ 2· ·3	○	·1 4·
23	·2 1·	○	·3 4·
24		○	4·^{2} ·1 ·3
25	4· ·1	○	2· 3·
26	○ 3· 4· 2·	○	1·
27	4· 3· ·2 ·1	○	
28	4· ·3	○	1· ·2
29	·4 ·3	○	2· ·1 ●
30	·4 2· 1·	○	·3

WASHINGTON MEAN TIME.

MAY.

d	h	m	s				d	h	m	s				d	h	m	s			
1	7	40	27.5	I.	Ec.	Dis.	11	2	26		III.	Tr.	Eg.	21	16	43	48.9	III.*	Ec.	Re.
	10	36		I.	Oc.	Re.		3	35		I.	Sh.	Eg.		17	12		I.	Tr.	In.
	12	9	42.5	II.	Ec.	Dis.		4	27		I.	Tr.	Eg.		18	12		III.	Oc.	Dis.
	16	17		II.*	Oc.	Re.		12	46		IV.	Sh.	In.		18	27		I.	Sh.	Eg.
2	4	56		I.	Sh.	In.		13	16		IV.	Sh.	Eg.		19	27		I.	Tr.	Eg.
	5	40		I.	Tr.	In.		22	31	39.0	I.	Ec.	Dis.		20	51		III.	Oc.	Re.
	7	11		I.	Sh.	Eg.	12	1	37		I.	Oc.	Re.	22	13	22	43.2	I.	Ec.	Dis.
	7	56		I.	Tr.	Eg.		4	6		II.	Ec.	Dis.		16	37		I.*	Oc.	Re.
3	2	8	58.7	I.	Ec.	Dis.		8	31		II.	Oc.	Re.		20	1	41.4	II.	Ec.	Dis.
	5	7		I.	Oc.	Re.		19	49		I.	Sh.	In.	23	0	43		II.	Oc.	Re.
	6	28		II.	Sh.	In.		20	42		I.	Tr.	In.		10	41		I.	Sh.	In.
	8	0		II.	Tr.	In.		22	4		I.	Sh.	Eg.		11	42		I.	Tr.	In.
	8	48		IV.	Oc.	Dis.		22	57		I.	Tr.	Eg.		12	56		I.	Sh.	Eg.
	9	10		II.	Sh.	Eg.	13	17	0	9.2	I.	Ec.	Dis.		13	57		I.	Tr.	Eg.
	9	28		IV.	Oc.	Re.		20	7		I.	Oc.	Re.	24	7	51	12.1	I.	Ec.	Dis.
	10	40		II.	Tr.	Eg.		22	21		II.	Sh.	In.		11	6		I.	Oc.	Re.
	16	9		III.*	Sh.	In.	14	0	12		II.	Tr.	In.		14	14		II.	Sh.	In.
	18	59		III.	Sh.	Eg.		1	2		II.	Sh.	Eg.		16	22		II.*	Tr.	In.
	19	14		III.	Tr.	In.		2	51		II.	Tr.	Eg.		16	54		II.	Sh.	Eg.
	22	0		III.	Tr.	Eg.		10	7	52.3	III.	Ec.	Dis.		18	59		II.	Tr.	Eg.
	23	25		I.	Sh.	In.		12	43	57.9	III.	Ec.	Re.	25	4	15		III.	Sh.	In.
4	0	11		I.	Tr.	In.		13	46		III.	Oc.	Dis.		5	9		I.	Sh.	In.
	1	40		I.	Sh.	Eg.		14	17		I.	Sh.	In.		6	12		I.	Tr.	In.
	2	27		I.	Tr.	Eg.		15	12		I.*	Tr.	In.		7	1		III.	Sh.	Eg.
	20	37	33.0	I.	Ec.	Dis.		16	28		III.*	Oc.	Re.		7	24		I.	Sh.	Eg.
	23	37		I.	Oc.	Re.		16	32		I.*	Sh.	Eg.		8	27		I.	Tr.	Eg.
5	1	28	57.1	II.	Ec.	Dis.		17	27		I.	Tr.	Eg.		8	35		III.	Tr.	In.
	5	42		II.	Oc.	Re.	15	11	28	40.2	I.	Ec.	Dis.		11	11		III.	Tr.	Eg.
	17	54		I.	Sh.	In.		14	37		I.	Oc.	Re.	26	2	19	45.3	I.	Ec.	Dis.
	18	41		I.	Tr.	In.		17	24	32.7	II.	Ec.	Dis.		5	36		I.	Oc.	Re.
	20	9		I.	Sh.	Eg.		21	55		II.	Oc.	Re.		9	20	33.5	II.	Ec.	Dis.
	20	56		I.	Tr.	Eg.	16	8	46		I.	Sh.	In.		14	6		II.	Oc.	Re.
6	15	6	3.2	I.*	Ec.	Dis.		9	42		I.	Tr.	In.		23	37		I.	Sh.	In.
	18	7		I.	Oc.	Re.		11	1		I.	Sh.	Eg.	27	0	42		I.	Tr.	In.
	19	46		II.	Sh.	In.		11	57		I.	Tr.	Eg.		1	52		I.	Sh.	Eg.
	21	24		II.	Tr.	In.	17	5	57	9.8	I.	Ec.	Dis.		2	57		I.	Tr.	Eg.
	22	27		II.	Sh.	Eg.		9	7		I.	Oc.	Re.		20	48	13.8	I.	Ec.	Dis.
7	0	3		II.	Tr.	Eg.		11	39		II.	Sh.	In.	28	0	6		I.	Oc.	Re.
	6	5	58.3	III.	Ec.	Dis.		13	36		II.	Tr.	In.		3	31		II.	Sh.	*In.
	8	43	25.9	III.	Ec.	Re.		14	20		II.	Sh.	Eg.		5	45		II.	Tr.	In.
	9	18		III.	Oc.	Dis.		16	14		II.*	Tr.	Eg.		6	11		II.	Sh.	Eg.
	12	4		III.	Oc.	Re.	18	0	13		III.	Sh.	In.		8	22		II.	Tr.	Eg.
	12	23		I.	Sh.	In.		3	0		III.	Sh.	Eg.		18	6		I.	Sh.	In.
	13	11		I.	Tr.	In.		3	15		I.	Sh.	In.		18	10	11.2	III.	Ec.	Dis.
	14	38		I.	Sh.	Eg.		4	10		III.	Tr.	In.		19	12		I.	Tr.	In.
	15	26		I.*	Tr.	Eg.		4	12		I.	Tr.	In.		20	21		I.	Sh.	Eg.
8	9	34	35.0	I.	Ec.	Dis.		5	30		I.	Sh.	Eg.		20	43	31.4	III.	Ec.	Re.
	12	37		I.	Oc.	Re.		6	27		I.	Tr.	Eg.		21	27		I.	Tr.	Eg.
	14	47	13.1	II.	Ec.	Dis.		6	50		III.	Tr.	Eg.		22	36		III.	Oc.	Dis.
	19	6		II.	Oc.	Re.	19	0	25	43.1	I.	Ec.	Dis.	29	1	11		III.	Oc.	Re.
9	6	51		I.	Sh.	In.		3	37		I.	Oc.	Re.		15	16	44.6	I.*	Ec.	Dis.
	7	41		I.	Tr.	In.		6	43	32.6	II.	Ec.	Dis.		18	36		I.	Oc.	Re.
	9	6		I.	Sh.	Eg.		11	20		II.	Oc.	Re.		22	38	38.3	II.	Ec.	Dis.
	9	56		I.	Tr.	Eg.		21	43		I.	Sh.	In.	30	3	29		II.	Oc.	Re.
10	4	3	5.7	I.	Ec.	Dis.		22	42		I.	Tr.	In.		12	34		I.	Sh.	In.
	7	7		I.	Oc.	Re.		23	58		I.	Sh.	Eg.		13	42		I.	Tr.	In.
	9	4		II.	Sh.	In.	20	0	57		I.	Tr.	Eg.		14	49		I.	Sh.	Eg.
	10	48		II.	Tr.	In.		18	54	12.2	I.	Ec.	Dis.		15	57		I.*	Tr.	Eg.
	11	45		II.	Sh.	Eg.		22	7		I.	Oc.	Re.	31	9	45	12.8	I.	Ec.	Dis.
	13	27		II.	Tr.	Eg.	21	0	56		II.	Sh.	In.		13	5		I.	Oc.	Re.
	20	11		III.	Sh.	In.		2	59		II.	Tr.	In.		16	49		II.	Sh.	In.
	23	0		III.	Sh.	Eg.		3	37		II.	Sh.	Eg.		19	8		II.	Tr.	In.
	23	43		III.	Tr.	In.		5	36		II.	Tr.	Eg.		19	29		II.	Sh.	Eg.
11	1	20		I.	Sh.	In.		14	9	5.5	III.	Ec.	Dis.		21	44		II.	Tr.	Eg.
	2	12		I.	Tr.	In.		16	12		I.*	Sh.	In.							

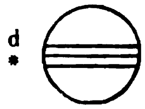
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse. Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

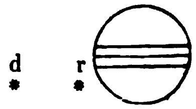
MAY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

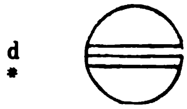
I.



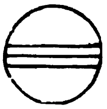
III.



II.



IV. No Eclipse.



Configurations at 15ʰ 30ᵐ for an Inverting Telescope.

Day.	West.		East.
1	·4	○	·1 ·3 ·2 ●
2	·41·	○	2· 3·
3	2·	○	3· ·4 1·
4	3· ·2 ·1	○	·4
5	3·	○	1· ·2 ·4
6	·3 ·1	○	2· ·4
7	2· 1·	○	·3 4·
8	·2	○	·1 ·3 4·
9	1·	○	2· 3· 4·
10	2·	○	3· ·1 4·
11	3· ·2 ·1	○	4·
12	3· 4·	○	1· ·2
13	4· ·3 ·1	○	2·
14	○ 1· 4· 2·	○	·3 ●
15	4· ·2	○	·1 ·3
16	·4 1·	○	·2 3·
17	○ 2· ·4	○	·13·
18	·4 ·2 3· 1·	○	
19	3· ·4	○	·21·
20	·3 ·1	○	·4 2·
21	2· ·3	○	1· ·4
22	·2	○	·3 ·4 ·1 ●
23	1·	○	·2 3· ·4
24		○	2· ·1 3· 4·
25	2· 1· 3·	○	4·
26	3·	○	·2 1· 4·
27	·3 ·1	○	2·4·
28	○ 4· 2··3	○	1·
29	4· ·2 ·1	○	·3
30	○ 1· 4·	○	·2 ·3
31	4·	○	2· ·1 3·

WASHINGTON MEAN TIME.

JUNE.

d	h	m	s			
1	7	3		I.	Sh.	In.
	8	12		I.	Tr.	In.
	8	17		III.	Sh.	In.
	9	18		I.	Sh.	Eg.
	10	26		I.	Tr.	Eg.
	11	1		III.	Sh.	Eg.
	12	59		III.	Tr.	In.
	15	31		III. *	Tr.	Eg.
2	4	13	45.7	I.	Ec.	Dis.
	7	35		I.	Oc.	Re.
	11	57	23.4	II.	Ec.	Dis.
	16	52		II.	Oc.	Re.
3	1	32		I.	Sh.	In.
	2	42		I.	Tr.	In.
	3	47		I.	Sh.	Eg.
	4	56		I.	Tr.	Eg.
	22	42	13.9	I.	Ec.	Dis.
4	2	5		I.	Oc.	Re.
	6	6		II.	Sh.	In.
	8	31		II.	Tr.	In.
	8	46		II.	Sh.	Eg.
	11	7		II.	Tr.	Eg.
	20	0		I.	Sh.	In.
	21	11		I.	Tr.	In.
	22	11	4.6	III.	Ec.	Dis.
	22	15		I.	Sh.	Eg.
	23	25		I.	Tr.	Eg.
5	0	43	0.8	III.	Ec.	Re.
	2	58		III.	Oc.	Dis.
	5	28		III.	Oc.	Re.
	17	10	44.6	I.	Ec.	Dis.
	20	34		I.	Oc.	Re.
6	1	15	24.8	II.	Ec.	Dis.
	6	14		II.	Oc.	Re.
	14	29		I. *	Sh.	In.
	15	41		I. *	Tr.	In.
	16	44		I.	Sh.	Eg.
	17	55		I.	Tr.	Eg.
7	11	39	12.6	I.	Ec.	Dis.
	15	3		I. *	Oc.	Re.
	19	24		II.	Sh.	In.
	21	53		II.	Tr.	In.
	22	4		II.	Sh.	Eg.
8	0	28		II.	Tr.	Eg.
	8	57		I.	Sh.	In.
	10	10		I.	Tr.	In.
	11	12		I.	Sh.	Eg.
	12	18		III.	Sh.	In.
	12	24		I.	Tr.	Eg.
	15	1		III. *	Sh.	Eg.
	17	20		III.	Tr.	In.
	19	48		III.	Tr.	Eg.
9	6	7	45.2	I.	Ec.	Dis.
	9	33		I.	Oc.	Re.
	14	34	2.4	II. *	Ec.	Dis.
	19	37		II.	Oc.	Re.
10	3	26		I.	Sh.	In.
	4	40		I.	Tr.	In.
	5	41		I.	Sh.	Eg.
	6	54		I.	Tr.	Eg.
11	0	36	13.1	I.	Ec.	Dis.
	4	2		I.	Oc.	Re.
	8	42		II.	Sh.	In.
	11	15		II.	Tr.	In.
	11	21		II.	Sh.	Eg.
11	13	49		II. *	Tr.	Eg.
	21	54		I.	Sh.	In.
	23	9		I.	Tr.	In.
12	0	9		I.	Sh.	Eg.
	1	23		I.	Tr.	Eg.
	2	12	12.2	III.	Ec.	Dis.
	4	42	33.8	III.	Ec.	Re.
	7	17		III.	Oc.	Dis.
	9	43		III.	Oc.	Re.
	19	4	43.7	I.	Ec.	Dis.
	22	32		I.	Oc.	Re.
13	3	52	0.1	II.	Ec.	Dis.
	8	58		II.	Oc.	Re.
	16	23		I. *	Sh.	In.
	17	39		I.	Tr.	In.
	18	38		I.	Sh.	Eg.
	19	53		I.	Tr.	Eg.
14	13	33	11.2	I.	Ec.	Dis.
	17	1		I.	Oc.	Re.
	22	0		II.	Sh.	In.
15	0	37		II.	Tr.	In.
	0	39		II.	Sh.	Eg.
	3	10		II.	Tr.	Eg.
	10	51		I.	Sh.	In.
	12	8		I.	Tr.	In.
	13	6		I.	Sh.	Eg.
	14	22		I. *	Tr.	Eg.
	16	19		III. *	Sh.	In.
	19	1		III.	Sh.	Eg.
	21	38		III.	Tr.	In.
16	0	2		III.	Tr.	Eg.
	8	1	43.8	I.	Ec.	Dis.
	11	31		I.	Oc.	Re.
	17	10	29.9	II.	Ec.	Dis.
	19	43	48.3	II.	Ec.	Re.
	19	46		II.	Oc.	Dis.
	22	19		II.	Oc.	Re.
17	5	20		I. *	Sh.	In.
	6	38		I.	Tr.	In.
	7	35		I.	Sh.	Eg.
	8	52		I.	Tr.	Eg.
18	2	30	11.7	I.	Ec.	Dis.
	6	0		I.	Oc.	Re.
	11	18		II.	Sh.	In.
	13	57		II. *	Sh.	Eg.
	13	58		II. *	Tr.	In.
	16	31		II.	Tr.	Eg.
	23	48		I.	Sh.	In.
19	1	7		I.	Tr.	In.
	2	3		I.	Sh.	Eg.
	3	21		I.	Tr.	Eg.
	6	13	31.1	III.	Ec.	Dis.
	8	42	37.5	III.	Ec.	Re.
	11	34		III.	Oc.	Dis.
	13	56		III. *	Oc.	Re.
	20	58	42.5	I.	Ec.	Dis.
20	0	29		I.	Oc.	Re.
	6	28	24.5	II.	Ec.	Dis.
	9	1	26.5	II.	Ec.	Re.
	9	7		II.	Oc.	Dis.
	11	40		II.	Oc.	Re.
	18	17		I.	Sh.	In.
	19	36		I.	Tr.	In.
	20	32		I.	Sh.	Eg.
	21	50		I.	Tr.	Eg.
21	15	27	9.6	I. *	Ec.	Dis.
	18	58		I.	Oc.	Re.
22	0	36		II.	Sh.	In.
	3	14		II.	Sh.	Eg.
	3	19		II.	Tr.	In.
	5	51		II.	Tr.	Eg.
	12	45		I.	Sh.	In.
	14	5		I. *	Tr.	In.
	15	0		I.	Sh.	Eg.
	16	19		I. *	Tr.	Eg.
	20	20		III.	Sh.	In.
	23	1		III.	Sh.	Eg.
23	1	53		III.	Tr.	In.
	4	13		III.	Tr.	Eg.
	9	55	42.3	I.	Ec.	Dis.
	13	28		I. *	Oc.	Re.
	19	46	46.7	II.	Ec.	Dis.
	22	19	32.3	II.	Ec.	Re.
	22	28		II.	Oc.	Dis.
24	1	0		II.	Oc.	Re.
	7	14		I.	Sh.	In.
	8	35		I.	Tr.	In.
	9	29		I.	Sh.	Eg.
	10	49		I.	Tr.	Eg.
25	4	24	10.2	I.	Ec.	Dis.
	7	57		I.	Oc.	Re.
	13	54		II.	Sh.	In.
	16	32		II.	Sh.	Eg.
	16	39		II.	Tr.	In.
	19	11		II.	Tr.	Eg.
26	1	42		I.	Sh.	In.
	3	4		I.	Tr.	In.
	3	57		I.	Sh.	Eg.
	5	18		I.	Tr.	Eg.
	10	14	46.2	III.	Ec.	Dis.
	12	42	28.0	III.	Ec.	Re.
	15	48		III. *	Oc.	Dis.
	18	5		III.	Oc.	Re.
	22	52	41.1	I.	Ec.	Dis.
27	2	26		I.	Oc.	Re.
	9	4	37.6	II.	Ec.	Dis.
	11	37	6.6	II.	Ec.	Re.
	11	48		II.	Oc.	Dis.
	14	20		II. *	Oc.	Re.
	20	11		I.	Sh.	In.
	21	33		I.	Tr.	In.
	22	26		I.	Sh.	Eg.
	23	47		I.	Tr.	Eg.
28	17	21	7.9	I.	Ec.	Dis.
	20	55		I.	Oc.	Re.
29	3	12		II.	Sh.	In.
	5	50		II.	Sh.	Eg.
	5	59		II.	Tr.	In.
	8	30		II.	Tr.	Eg.
	14	39		I. *	Sh.	In.
	16	2		I. *	Tr.	In.
	16	54		I.	Sh.	Eg.
	18	16		I.	Tr.	Eg.
30	0	21		III.	Sh.	In.
	3	1		III.	Sh.	Eg.
	6	4		III.	Tr.	In.
	8	20		III.	Tr.	Eg.
	11	49	40.9	I.	Ec.	Dis.
	15	24		I. *	Oc.	Re.
	22	22	51.9	II.	Ec.	Dis.

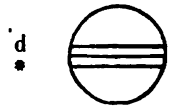
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance Re., reappearance; Ec., eclipse. Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

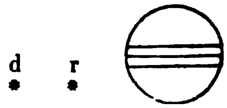
JUNE.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

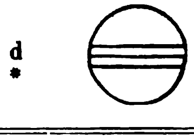
I.



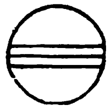
III.



II.



IV. No Eclipse.



Configurations at 15h for an Inverting Telescope.

Day.	West.		East.
1	○ 3· 4· 2· 1·	○	
2	·4 3·	○	·1 ·2 ●
3	·4 ·3 ·1	○	2·
4	·4 ·3 2·	○	1·
5	·2 ·4 ·1	○	·3
6		○	1· ·4 ·2 ·3
7		○	2· 3· ·4 ·1 ●
8	2· 1·	○	3· ·4
9	3· ·2	○	·1 ·4
10	·3 1·	○	·2 4·
11	·3 2·	○	1· 4·
12	·2 ·1	○	·3 4·
13		○	1· ·2 4· ·3
14	4·	○	2· 3· ·1 ●
15	4· 2· 1·	○	3·
16	4· 3· ·2	○	·1
17	4· 3· 1·	○	·2
18	○ 2· 4· ·3	○	·1
19	·4 ·2 1·	○	·3
20	·4	○	1· 2 ·3
21	·4 ·1	○	2· 3·
22	○ 1· 2· ·4	○	3·
23	3· ·2	○	·1 ·4
24	3· 1·	○	·2 ·4
25	·3	○	2· ·1 ·4
26	2· ·1 ·3	○	·4
27		○	·2 1· ·3 4·
28	·1	○	2· 3· 4·
29	2·	○	1· 3· 4·
30	·2 3·	○	4· ·1 ●

WASHINGTON MEAN TIME.

JULY.

d	h	m	s			
1	0	55	4.5	II.	Ec.	Re.
	1	8		II.	Oc.	Dis.
	3	40		II.	Oc.	Re.
	9	8		I.	Sh.	In.
	10	31		I. *	Tr.	In.
	11	23		I. *	Sh.	Eg.
	12	45		I. *	Tr.	Eg.
2	6	18	8.7	I.	Ec.	Dis.
	9	52		I.	Oc.	Re.
	16	30		II. *	Sh.	In.
	19	8		II.	Sh.	Eg.
	19	19		II.	Tr.	In.
	21	50		II.	Tr.	Eg.
3	3	37		I.	Sh.	In.
	5	0		I.	Tr.	In.
	5	52		I.	Sh.	Eg.
	7	13		I.	Tr.	Eg.
	14	16	30.1	III. *	Ec.	Dis.
	16	42	46.9	III. *	Ec.	Re.
	19	58		III.	Oc.	Dis.
	22	11		III.	Oc.	Re.
4	0	46	39.9	I.	Ec.	Dis.
	4	21		I.	Oc.	Re.
	11	40	39.6	II. *	Ec.	Dis.
	14	12	35.8	II. *	Ec.	Re.
	14	28		II. *	Oc.	Dis.
	16	59		II. *	Oc.	Re.
	22	5		I.	Sh.	In.
	23	29		I.	Tr.	In.
5	0	20		I.	Sh.	Eg.
	1	42		I.	Tr.	Eg.
	19	15	7.2	I.	Ec.	Dis.
	22	50		I.	Oc.	Re.
6	5	48		II.	Sh.	In.
	8	25		II.	Sh.	Eg.
	8	38		II. *	Tr.	In.
	11	8		II. *	Tr.	Eg.
	16	34		I. *	Sh.	In.
	17	58		I.	Tr.	In.
	18	49		I.	Sh.	Eg.
	20	11		I.	Tr.	Eg.
7	4	22		III.	Sh.	In.
	7	1		III.	Sh.	Eg.
	10	13		III.	Tr.	In.
	12	24		III. *	Tr.	Eg.
	13	43	40.5	I. *	Ec.	Dis.
	17	19		I.	Oc.	Re.
8	0	58	46.5	II.	Ec.	Dis.
	3	30	26.3	II.	Ec.	Re.
	3	47		II.	Oc.	Dis.
	6	17		II.	Oc.	Re.
	11	2		I. *	Sh.	In.
	12	27		I. *	Tr.	In.
	13	17		I. *	Sh.	Eg.
	14	40		I. *	Tr.	Eg.
9	8	12	8.6	I.	Ec.	Dis.
	11	48		I. *	Oc.	Re.
	19	6		II.	Sh.	In.
	21	43		II.	Sh.	Eg.
	21	57		II.	Tr.	In.
10	0	27		II.	Tr.	Eg.
	5	31		I.	Sh.	In.
	6	55		I.	Tr.	In.
	7	46		I.	Sh.	Eg.
	9	8		I.	Tr.	Eg.
	18	17	36.6	III.	Ec.	Dis.
	20	42	28.0	III.	Ec.	Re.
11	0	4		III.	Oc.	Dis.
	2	14		III.	Oc.	Re.
	2	40	40.3	I.	Ec.	Dis.
11	6	16		I.	Oc.	Re.
	14	16	31.0	II. *	Ec.	Dis.
	16	47	54.4	II.	Ec.	Re.
	17	5		II.	Oc.	Dis.
	19	35		II.	Oc.	Re.
	23	59		I.	Sh.	In.
12	1	23		I.	Tr.	In.
	2	14		I.	Sh.	Eg.
	3	36		I.	Tr.	Eg.
	21	9	7.6	I.	Ec.	Dis.
13	0	45		I.	Oc.	Re.
	8	24		II.	Sh.	In.
	11	1		II. *	Sh.	Eg.
	11	16		II. *	Tr.	In.
	13	45		II. *	Tr.	Eg.
	18	28		I.	Sh.	In.
	19	52		I.	Tr.	In.
	20	43		I.	Sh.	Eg.
	22	5		I.	Tr.	Eg.
14	8	24		III.	Sh.	In.
	11	0		III. *	Sh.	Eg.
	14	17		III. *	Tr.	In.
	15	37	41.4	I. *	Ec.	Dis.
	16	25		III. *	Tr.	Eg.
	19	13		I.	Oc.	Re.
15	3	34	31.3	II.	Ec.	Dis.
	6	5	38.3	II.	Ec.	Re.
	6	23		II.	Oc.	Dis.
	8	53		II.	Oc.	Re.
	12	56		I. *	Sh.	In.
	14	21		I. *	Tr.	In.
	15	11		I. *	Sh.	Eg.
	16	34		I. *	Tr.	Eg.
16	10	6	9.7	I.	Ec.	Dis.
	13	42		I. *	Oc.	Re.
	21	41		II.	Sh.	In.
17	0	19		II.	Sh.	Eg.
	0	34		II.	Tr.	In.
	3	3		II.	Tr.	Eg.
	7	25		I.	Sh.	In.
	8	50		I.	Tr.	In.
	9	40		I.	Sh.	Eg.
	11	3		I. *	Tr.	Eg.
	22	18	37.7	III.	Ec.	Dis.
18	0	42	3.1	III.	Ec.	Re.
	4	7		III.	Oc.	Dis.
	4	34	42.0	I.	Ec.	Dis.
	6	12		III.	Oc.	Re.
	8	10		I.	Oc.	Re.
	16	52	12.9	II.	Ec.	Dis.
	19	23	3.7	II.	Ec.	Re.
	19	41		II.	Oc.	Dis.
	22	10		II.	Oc.	Re.
19	1	53		I.	Sh.	In.
	3	18		I.	Tr.	In.
	4	8		I.	Sh.	Eg.
	5	31		I.	Tr.	Eg.
	23	3	9.8	I.	Ec.	Dis.
20	2	38		I.	Oc.	Re.
	11	0		II. *	Sh.	In.
	13	37		II. *	Sh.	Eg.
	13	51		II. *	Tr.	In.
	16	19		II. *	Tr.	Eg.
	20	22		I.	Sh.	In.
	21	46		I.	Tr.	In.
	22	37		I.	Sh.	Eg.
	23	59		I.	Tr.	Eg.
21	12	25		III. *	Sh.	In.
	15	0		III. *	Sh.	Eg.
	17	31	44.0	I.	Ec.	Dis.
21	18	18		III.	Tr.	In.
	20	22		III.	Tr.	Eg.
	21	7		I.	Oc.	Re.
22	6	10	6.9	II.	Ec.	Dis.
	8	40	41.5	II.	Ec.	Re.
	8	58		II.	Oc.	Dis.
	11	26		II. *	Oc.	Re.
	14	50		I. *	Sh.	In.
	16	14		I. *	Tr.	In.
	17	5		I.	Sh.	Eg.
	18	27		I.	Tr.	Eg.
23	12	0	13.1	I. *	Ec.	Dis.
	15	35		I. *	Oc.	Re.
24	0	18		II.	Sh.	In.
	2	55		II.	Sh.	Eg.
	3	8		II.	Tr.	In.
	5	36		II.	Tr.	Eg.
	9	19		I.	Sh.	In.
	10	42		I. *	Tr.	In.
	11	34		I. *	Sh.	Eg.
	12	55		I. *	Tr.	Eg.
25	2	19	31.3	III.	Ec.	Dis.
	4	41	30.5	III.	Ec.	Re.
	6	28	46.2	I.	Ec.	Dis.
	8	5		III.	Oc.	Dis.
	10	3		I.	Oc.	Re.
	10	6		III.	Oc.	Re.
	19	27	46.2	II.	Ec.	Dis.
	21	58	4.8	II.	Ec.	Re.
	22	14		II.	Oc.	Dis.
26	0	42		II.	Oc.	Re.
	3	47		I.	Sh.	In.
	5	10		I.	Tr.	In.
	6	2		I.	Sh.	Eg.
	7	23		I.	Tr.	Eg.
27	0	57	14.3	I.	Ec.	Dis.
	4	31		I.	Oc.	Re.
	13	36		II. *	Sh.	In.
	16	13		II. *	Sh.	Eg.
	16	25		II. *	Tr.	In
	18	52		II.	Tr.	Eg.
	22	16		I.	Sh.	In.
	23	38		I.	Tr.	In.
28	0	31		I.	Sh.	Eg.
	1	51		I.	Tr.	Eg.
	16	26		III. *	Sh.	In.
	19	0		III.	Sh.	Eg.
	19	25	49.2	I.	Ec.	Dis.
	22	14		III.	Tr.	In.
	22	59		I.	Oc.	Re.
29	0	14		III.	Tr.	Eg.
	8	45	34.4	II.	Ec.	Dis.
	11	15	37.2	II. *	Ec.	Re.
	11	31		II. *	Oc.	Dis.
	13	57		II. *	Oc.	Re.
	16	44		I. *	Sh.	In.
	18	6		I.	Tr.	In.
	18	59		I.	Sh.	Eg.
	20	19		I.	Tr.	Eg.
30	13	54	19.0	I. *	Ec.	Dis.
	17	27		I.	Oc.	Re.
31	2	54		II.	Sh.	In.
	5	31		II.	Sh.	Eg.
	5	41		II.	Tr.	In.
	8	8		II.	Tr.	Eg.
	11	13		I. *	Sh.	In.
	12	34		I. *	Tr.	In.
	13	27		I. *	Sh.	Eg.
	14	47		I. *	Tr.	Eg.

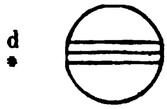
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

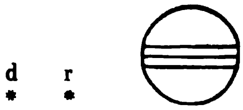
JULY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

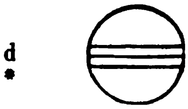
I.



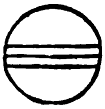
III.



II.



IV. No Eclipse.



Configurations at 14h for an Inverting Telescope.

Day.	West.		East.
1	3· 4· 1·	○	·2
2	·34·	○	·1 2·
3	4· 2· 1· ·3	○	
4	4· ·2	○	1· ·3
5	·4 ·1	○	2· ·3
6	·4 2·	○	1· 3·
7	·4 ·2 3· ·1	○	
8	○ 1· 3· ·4	○	·2
9	·3	○	·1 2· ·4 ●
10	2· ·31·	○	·4
11	·2	○	·1·3 ·4
12	·1	○	·2 ·3 ·4
13	○ 2·	○	1·3· ·4
14	○ 3· ·2 ·1	○	4·
15	3·	○	1· ·2 4·
16	·3	○	·1 2· 4·
17	2· 3· 1·	○	4·
18	4··2	○	·1 ·3
19	4· 1·	○	·2 ·3
20	4·	-○	2· 1· 3·
21	4· ·2 ·1	○	3·
22	·4 3·	○	1· ·2
23	·4 3·	○	2· ·1 ●
24	·4 ·3 2· 1·	○	
25	·4 ·2	○	·3·1
26	1·	○	·4 ·2 ·3
27		○	2· ·1 ·4 3·
28	2· 1·	○	3· ·4
29	3·	○	1· ·4 ·2 ●
30	3· ·1	○	2· ·4
31	○ 1· ·3 2·	○	4·

WASHINGTON MEAN TIME.

AUGUST.

d	h	m	s			
1	6	20	33.8	III.	Ec.	Dis.
	8	22	53.0	I.	Ec.	Dis.
	8	41	6.4	III.	Ec.	Re.
	11	55		I.*	Oc.	Re.
	11	59		III.*	Oc.	Dis.
	13	56		III.*	Oc.	Re.
	22	3	11.4	II.	Ec.	Dis.
2	0	32	58.4	II.	Ec.	Re.
	0	45		II.	Oc.	Dis.
	3	12		II.	Oc.	Re.
	5	41		I.	Sh.	In.
	7	2		I.	Tr.	In.
	7	55		I.	Sh.	Eg.
	9	15		I.*	Tr.	Eg.
3	2	51	21.7	I.	Ec.	Dis.
	6	23		I.	Oc.	Re.
	16	12		II.*	Sh.	In.
	18	49		II.	Sh.	Eg.
	18	56		II.	Tr.	In.
	21	23		II.	Tr.	Eg.
4	0	9		I.	Sh.	In.
	1	30		I.	Tr.	In.
	2	24		I.	Sh.	Eg.
	3	42		I.	Tr.	Eg.
	20	27		III.	Sh.	In.
	21	19	57.9	I.	Ec.	Dis.
	23	0		III.	Sh.	Eg.
5	0	50		I.	Oc.	Re.
	2	6		III.	Tr.	In.
	4	1		III.	Tr.	Eg.
	11	20	54.8	II.*	Ec.	Dis.
	13	50	26.2	II.*	Ec.	Re.
	13	59		II.*	Oc.	Dis.
	16	26		II.*	Oc.	Re.
	18	38		I.	Sh.	In.
	19	58		I.	Tr.	In.
	20	52		I.	Sh.	Eg.
	22	10		I.	Tr.	Eg.
6	15	48	28.5	I.*	Ec.	Dis.
	19	18		I.	Oc.	Re.
7	5	31		II.	Sh.	In.
	8	8		II.	Sh.	Eg.
	8	11		II.	Tr.	In.
	10	37		II.*	Tr.	Eg.
	13	6		I.*	Sh.	In.
	14	26		I.*	Tr.	In.
	15	21		I.*	Sh.	Eg.
	16	38		I.*	Tr.	Eg.
8	10	17	3.7	I.*	Ec.	Dis.
	10	22	12.5	III.*	Ec.	Dis.
	12	41	18.7	III.*	Ec.	Re.
	13	46		I.*	Oc.	Re.
	15	48		III.*	Oc.	Dis.
	17	42		III.	Oc.	Re.
9	0	38	30.1	II.	Ec.	Dis
	3	7	45.9	II.	Ec.	Re.
	3	13		II.	Oc.	Dis.
	5	40		II.	Oc.	Re.
	7	35		I.	Sh.	In.
	8	53		I.	Tr.	In.
	9	49		I.*	Sh.	Eg.
	11	5		I.*	Tr.	Eg.
10	4	45	33.3	I.	Ec.	Dis.
	8	13		I.	Oc.	Re.
	18	49		II.	Sh.	In.
	21	26		II.	Sh.	Eg
10	21	25		II.	Tr.	In.
	23	51		II.	Tr.	Eg.
11	2	3		I.	Sh.	In.
	3	20		I.	Tr.	In.
	4	18		I.	Sh.	Eg.
	5	32		I.	Tr.	Eg.
	23	14	10.5	I.	Ec.	Dis.
12	0	28		III.	Sh.	In.
	2	41		I.	Oc.	Re.
	3	0		III.	Sh.	Eg.
	5	52		III.	Tr.	In.
	7	44		III.	Tr.	Eg.
	13	56	9.6	II.*	Ec.	Dis.
	16	25	10.0	II.*	Ec.	Re.
	16	27		II.*	Oc.	Dis.
	18	53		II.	Oc.	Re.
	20	32		I.	Sh.	In.
	21	47		I.	Tr.	In.
	22	46		I.	Sh.	Eg.
	23	59		I.	Tr.	Eg.
13	17	42	42.1	I.	Ec.	Dis.
	21	8		I.	Oc.	Re.
14	8	7		II.	Sh.	In.
	10	39		II.*	Tr.	In.
	10	44		II.*	Sh.	Eg.
	13	5		II.*	Tr.	Eg.
	15	0		I.*	Sh.	In.
	16	15		I.*	Tr.	In.
	17	14		I.	Sh.	Eg.
	18	27		I.	Tr.	Eg.
15	12	11	18.6	I.*	Ec.	Dis.
	14	23	40.1	III.*	Ec.	Dis.
	15	35		I.*	Oc.	Re.
	16	41	19.7	III.*	Ec.	Re.
	19	32		III.	Oc.	Dis.
	21	23		III.	Oc.	Re.
16	3	13	33.5	II.	Ec.	Dis.
	8	5		II.	Oc.	Re.
	9	29		I.*	Sh.	In.
	10	42		I.*	Tr.	In.
	11	43		I.*	Sh.	Eg.
	12	54		I.*	Tr.	Eg.
17	6	39	49.1	I.	Ec.	Dis.
	10	3		I.*	Oc.	Re.
	21	26		II.	Sh.	In.
	23	53		II.	Tr.	In.
18	0	2		II.	Sh.	Eg.
	2	18		II.	Tr.	Eg.
	3	57		I.	Sh.	In.
	5	9		I.	Tr.	In.
	6	11		I.	Sh.	Eg.
	7	21		I.	Tr.	Eg.
19	1	8	27.4	I.	Ec.	Dis.
	4	29		III.	Sh.	In.
	4	30		I.	Oc.	Re.
	6	59		III.	Sh.	Eg.
	9	33		III.*	Tr.	In.
	11	22		III.*	Tr.	Eg.
	16	31	19.5	II.*	Ec.	Dis.
	21	17		II.	Oc.	Re.
	22	26		I.	Sh.	In.
	23	36		I.	Tr.	In.
20	0	40		I.	Sh.	Eg.
	1	48		I.	Tr.	Eg.
	19	37	0.2	I.	Ec.	Dis.
	22	57		I.	Oc.	Re.
21	10	45		II.*	Sh.	In.
	13	6		II.*	Tr.	In.
	13	21		II.*	Sh.	Eg.
	15	31		II.*	Tr.	Eg.
	16	54		I.*	Sh.	In.
	18	3		I.	Tr.	In.
	19	8		I.	Sh.	Eg.
	20	15		I.	Tr.	Eg.
22	14	5	37.7	I.*	Ec.	Dis.
	17	24		I.	Oc.	Re.
	18	25	39.4	III.	Ec.	Dis.
	20	41	51.8	III.	Ec.	Re.
	23	12		III.	Oc.	Dis.
23	0	59		III.	Oc.	Re.
	5	48	52.2	II.	Ec.	Dis.
	10	28		II.*	Oc.	Re.
	11	22		I.*	Sh.	In.
	12	30		I.*	Tr.	In.
	13	36		I.*	Sh.	Eg.
	14	42		I.*	Tr.	Eg.
24	8	34	9.6	I.	Ec.	Dis.
	11	51		I.*	Oc.	Re.
25	0	4		II.	Sh.	In.
	2	19		II.	Tr.	In.
	2	39		II.	Sh.	Eg.
	4	44		II.	Tr.	Eg.
	5	51		I.	Sh.	In.
	6	57		I.	Tr.	In.
	8	5		I.	Sh.	Eg.
	9	9		I.*	Tr.	Eg.
26	3	2	49.3	I.	Ec.	Dis.
	6	18		I.	Oc.	Re.
	8	30		III.	Sh.	In.
	10	59		III.*	Sh.	Eg.
	13	10		III.*	Tr.	In.
	14	57		III.*	Tr.	Eg.
	19	6	25.8	II.	Ec.	Dis.
	23	39		II.	Oc.	Re.
27	0	19		I.	Sh.	In.
	1	24		I.	Tr.	In.
	2	33		I.	Sh.	Eg.
	3	36		I.	Tr.	Eg.
	21	31	23.5	I.	Ec.	Dis.
28	0	45		I.	Oc.	Re.
	13	22		II.*	Sh.	In.
	15	31		II.*	Tr.	In.
	15	58		II.*	Sh.	Eg.
	17	56		II.	Tr.	Eg.
	18	48		I.	Sh.	In.
	19	51		I.	Tr.	In.
	21	2		I.	Sh.	Eg.
	22	3		I.	Tr.	Eg.
29	16	0	2.9	I.*	Ec.	Dis.
	19	12		I.	Oc.	Re.
	22	27	6.1	III.	Ec.	Dis.
30	0	41	51.3	III.	Ec.	Re.
	2	46		III.	Oc.	Dis.
	4	31		III.	Oc.	Re.
	8	23	58.1	II.	Ec.	Dis.
	12	49		II.*	Oc.	Re.
	13	16		I.*	Sh.	In.
	14	18		I.*	Tr.	In.
	15	30		I.*	Sh.	Eg.
	16	30		I.*	Tr.	Eg.
31	10	28	36.0	I.*	Ec.	Dis.
	13	39		I.*	Oc.	Re.

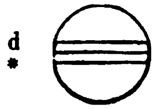
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

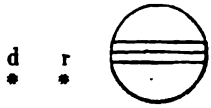
AUGUST.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

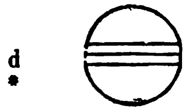
I.



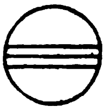
III.



II.



IV. No Eclipse.



Configurations at 13ʰ for an Inverting Telescope.

Day.	West.		East.
1	·2	○	·1 4· ·3 ●
2	1·	○	·2 4· ·3
3		○	4· 2· ·1 3·
4	2·4·1·	○	3·
5	4· 3· ·2	○	1·
6	4· 3· ·1	○	2·
7	4· ·3 2·	○	1·
8	·4 ·2 ·3	○	·1 ●
9	·4 1·	○	·2 ·3
10	·4	○	·12· 3·
11	2· 1· ·4	○	3·
12	· 3··2	○	·41·
13	3· ·1	○	·2 ·4
14	○ 2· ·3	○	1· ·4
15	·2 ·3 ·1	○	·4
16	1·	○	·2 ·3 4·
17		○	·1 2· ·3 4·
18	2· 1·	○	3· 4·
19	·2 3·	○	·1 4·
20	○ 4· 3· ·1	○	·2
21	·3 4·	○	2· 1·
22	4· ·2 ·3 ·1	○	
23	○ 1· 4·	○	·2 ·3
24	4·	○	·1 2· ·3
25	·4 2· 1·	○	3·
26	○ 3· ·4 ·2	○	·1
27	·4 3· 1·	○	·2
28	·3 ·4	○	2· 1·
29	2· ·3 ·1	○	·4
30		○	1· ·2 ·3 ·4
31		○	2· ·3 ·4 ·1 ●

WASHINGTON MEAN TIME.

SEPTEMBER.

d	h	m	s			
1	2	41		II.	Sh.	In.
	4	42		II.	Tr.	In.
	5	16		II.	Sh.	Eg.
	7	7		II.	Tr.	Eg.
	7	45		I. *	Sh.	In.
	8	44		I. *	Tr.	In.
	9	59		I. *	Sh.	Eg.
	10	56		I. *	Tr.	Eg.
2	4	57	17.3	I.	Ec.	Dis.
	8	6		I. *	Oc.	Re.
	12	32		III. *	Sh.	In.
	14	59		III. *	Sh.	Eg.
	16	41		III. *	Tr.	In.
	18	26		III.	Tr.	Eg.
	21	41	30.4	II.	Ec.	Dis.
3	1	59		II.	Oc.	Re.
	2	13		I.	Sh.	In.
	3	10		I.	Tr.	In.
	4	27		I.	Sh.	Eg.
	5	22		I.	Tr.	Eg.
	23	25	52.9	I.	Ec.	Dis.
4	2	32		I.	Oc.	Re.
	16	0		II. *	Sh.	In.
	17	52		II.	Tr.	In.
	18	35		II.	Sh.	Eg.
	20	17		II.	Tr.	Eg.
	20	42		I.	Sh.	In.
	21	37		I.	Tr.	In.
	22	56		I.	Sh.	Eg.
	23	49		I.	Tr.	Eg.
5	17	54	34.0	I.	Ec.	Dis.
	20	58		I.	Oc.	Re.
6	2	28	31.4	III.	Ec.	Dis.
	4	41	50.0	III.	Ec.	Re.
	6	15		III.	Oc.	Dis.
	7	59		III. *	Oc.	Re.
	10	59	2.8	II. *	Ec.	Dis.
	15	8		II. *	Oc.	Re.
	15	10		I. *	Sh.	In.
	16	3		I. *	Tr.	In.
	17	24		I. *	Sh.	Eg.
	18	15		I.	Tr.	Eg.
7	12	23	5.5	I. *	Ec.	Dis.
	15	25		I. *	Oc.	Re.
8	5	19		II.	Sh.	In.
	7	3		II.	Tr.	In.
	7	53		II. *	Sh.	Eg.
	9	28		II. *	Tr.	Eg.
	9	39		I. *	Sh.	In.
	10	30		I. *	Tr.	In.
	11	53		I. *	Sh.	Eg.
	12	42		I. *	Tr.	Eg.
9	6	51	51.5	I.	Ec.	Dis.
	9	51		I. *	Oc.	Re.
	16	34		III. *	Sh.	In.
	18	59		III.	Sh.	Eg.
	20	8		III.	Tr.	In.
	21	52		III.	Tr.	Eg.
10	0	16	34.4	II.	Ec.	Dis.
	4	7		I.	Sh.	In.
	4	17		II.	Oc.	Re.
	4	56		I.	Tr.	In.
10	6	21		I.	Sh.	Eg.
	7	8		I.	Tr.	Eg.
11	1	20	28.7	I.	Ec.	Dis.
	4	18		I.	Oc.	Re.
	18	38		II.	Sh.	In.
	20	13		II.	Tr.	In.
	21	12		II.	Sh.	Eg.
	22	36		I.	Sh.	In.
	22	38		II.	Tr.	Eg.
	23	22		I.	Tr.	In.
12	0	50		I.	Sh.	Eg.
	1	34		I.	Tr.	Eg.
	19	49	11.7	I.	Ec.	Dis.
	22	44		I.	Oc.	Re.
13	6	29	56.0	III.	Ec.	Dis.
	8	41	48.4	III. *	Ec.	Re.
	9	39		III. *	Oc.	Dis.
	11	23		III. *	Oc.	Re.
	13	34	7.6	II. *	Ec.	Dis.
	17	4		I. *	Sh.	In.
	17	25		II. *	Oc.	Re.
	17	48		I.	Tr.	In.
	19	18		I.	Sh.	Eg.
	20	0		I.	Tr.	Eg.
14	14	17	47.8	I. *	Ec.	Dis.
	17	10		I. *	Oc.	Re.
15	7	57		II. *	Sh.	In.
	9	22		II. *	Tr.	In.
	10	30		II. *	Sh.	Eg.
	11	33		I. *	Sh.	In.
	11	47		II. *	Tr.	Eg.
	12	15		I. *	Tr.	In.
	13	47		I. *	Sh.	Eg.
	14	27		I. *	Tr.	Eg.
16	8	46	32.4	I. *	Ec.	Dis.
	11	36		I. *	Oc.	Re.
	20	35		III.	Sh.	In.
	22	59		III.	Sh.	Eg.
	23	30		III.	Tr.	In.
17	1	15		III.	Tr.	Eg.
	2	51	39.7	II.	Ec.	Dis.
	6	2		I.	Sh.	In.
	6	33		II.	Oc.	Re.
	6	41		I.	Tr.	In.
	8	16		I. *	Sh.	Eg.
	8	53		I. *	Tr.	Eg.
18	3	15	11.6	I.	Ec.	Dis.
	6	3		I.	Oc.	Re.
	21	16		II.	Sh.	In.
	22	30		II.	Tr.	In.
	23	50		II.	Sh.	Eg.
19	0	30		I.	Sh.	In.
	0	55		II.	Tr.	Eg.
	1	7		I.	Tr.	In.
	2	44		I.	Sh.	Eg.
	3	19		I.	Tr.	Eg.
	21	43	56.3	I.	Ec.	Dis.
20	0	29		I.	Oc.	Re.
	10	31	34.4	III. *	Ec.	Dis.
	12	42	0.4	III. *	Ec.	Re.
	13	0		III. *	Oc.	Dis.
20	14	44		III. *	Oc.	Re.
	16	9	14.1	II. *	Ec.	Dis.
	18	59		I.	Sh.	In.
	19	33		I.	Tr.	In.
	19	40		II.	Oc.	Re.
	21	13		I.	Sh.	Eg.
	21	45		I.	Tr.	Eg.
21	16	12	34.4	I. *	Ec.	Dis.
	18	55		I.	Oc.	Re.
22	10	35		II. *	Sh.	In.
	11	39		II. *	Tr.	In.
	13	9		II. *	Sh.	Eg.
	13	27		I. *	Sh.	In.
	13	59		I. *	Tr.	In.
	14	4		II. *	Tr	Eg.
	15	40		I. *	Sh.	Eg.
	16	10		I. *	Tr.	Eg.
23	10	41	20.8	I. *	Ec.	Dis.
	13	21		I. *	Oc.	Re.
24	0	37		III.	Sh.	In.
	2	49		III.	Tr.	In.
	2	59		III.	Sh.	Eg.
	4	34		III.	Tr.	Eg.
	5	26	48.7	II.	Ec.	Dis.
	7	56		I. *	Sh.	In.
	8	25		I. *	Tr.	In.
	8	47		II. *	Oc.	Re.
	10	9		I. *	Sh.	Eg.
	10	37		I. *	Tr.	Eg.
25	5	10	1.9	I.	Ec.	Dis.
	7	47		I. *	Oc.	Re.
	23	54		II.	Sh.	In.
26	0	47		II.	Tr.	In.
	2	25		I.	Sh.	In.
	2	28		II.	Sh.	Eg.
	2	51		I.	Tr.	In.
	3	12		II.	Tr.	Eg.
	4	38		I.	Sh.	Eg.
	5	3		I.	Tr.	Eg.
	23	38	48.6	I.	Ec.	Dis.
27	2	11		I.	Oc.	Re.
	14	33	54.4	III. *	Ec.	Dis.
	18	3		III.	Oc.	Re.
	18	44	23.9	II.	Ec.	Dis.
	20	53		I.	Sh.	In.
	21	17		I.	Tr.	In.
	21	54		II.	Oc.	Re.
	23	6		I.	Sh.	Eg.
	23	29		I.	Tr.	Eg.
28	18	7	28.6	I.	Ec.	Dis.
	20	36		I.	Oc.	Re.
29	13	13		II. *	Sh.	In.
	13	55		II. *	Tr.	In.
	15	22		I. *	Sh.	In.
	15	43		I. *	Tr.	In.
	15	46		II. *	Sh.	Eg.
	16	20		II. *	Tr.	Eg.
	17	35		I.	Sh.	Eg.
	17	55		I.	Tr.	Eg.
30	12	36	16.9	I. *	Ec.	Dis.
	15	5		I. *	Oc.	Re.

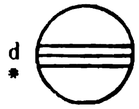
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance · Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite, Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

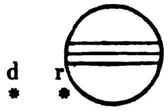
SEPTEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

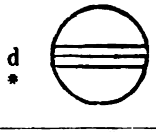
I.



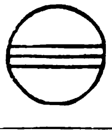
III.



II.



IV. No Eclipse.



Configurations at 12ʰ for an Inverting Telescope.

Day.	West.		East.
1	2· 1·	○	3· ·4
2	·2	○	3· ·1 4·
3	3· 1·	○	·2 4·
4	3·	○	2· ·1 4·
5	2· ·3 ·1	○	4·
6	4· ·2	○	·31·
7	4· ·1	○	2· ·3
8	○ 1· 4· 2·	○	3·
9	4· ·2	○	·13·
10	·4 3· 1·	○	·2
11	·4 3·	○	2· ·1
12	·4 ·3 2· ·1	○	
13	·4 ·2	○	1· ·3 ●
14	·1	○	·2 ·3 ·4 ●
15	○ 2·	○	1· ·4 3·
16	·2	○	·1 3· ·4
17	3· 1·	○	·2 ·4
18	3·	○	·12· ·4
19	·3 2· 1·	○	4·
20	·2 ·3	○	1· 4·
21	·1	○	·2 4· ·3
22	○ 2·	○	4· 1· 3·
23	·2 4·	○	3· ·1 ●
24	4· 3· 1·	○	·2
25	4· 3·	○	·1 2·
26	4· ·3 2·1·	○	
27	·4 ·2 ·3	○	1·
28	·4 ·1	○	·2 3
29	·4	○	2· 1· 3·
30	2· ·4 ·1	○	3·

WASHINGTON MEAN TIME.

OCTOBER.

d	h	m	s				d	h	m	s				d	h	m	s			
1	4	38		III.	Sh.	In.	11	5	41		I.	Oc.	Re.	22	15	13		II. *	Oc.	Dis.
	6	5		III.	Tr.	In.		22	38	50.2	III.	Ec.	Dis.		15	17		I. *	Tr.	In.
	6	59		III. *	Sh.	Eg.		23	55		II.	Oc.	Dis.		15	34		I. *	Sh.	In.
	7	51		III. *	Tr.	Eg.	12	0	42		I.	Sh.	In.		15	46		III. *	Tr.	In.
	8	1	59.4	II. *	Ec.	Dis.		0	43		I.	Tr.	In.		16	44		III. *	Sh.	In.
	9	50		I. *	Sh.	In.		0	44	59.0	III.	Ec.	Re.		17	29		I.	Tr.	Eg.
	10	9		I. *	Tr.	In.		2	21		II.	Oc.	Re.		17	43		III.	Tr.	Eg.
	11	1		II. *	Oc.	Re.		2	55		I.	Tr.	Eg.		17	47		I.	Sh.	Eg.
	12	3		I. *	Sh.	Eg.		2	55		I.	Sh.	Eg.		18	12	26.8	II.	Ec.	Re.
	12	21		I. *	Tr.	Eg.		21	55		I.	Oc.	Dis.		19	1		III.	Sh.	Eg.
2	7	4	59.7	I. *	Ec.	Dis.	13	0	7	1.9	I.	Ec.	Re.	23	12	31		I. *	Oc.	Dis.
	9	31		I. *	Oc.	Re.		18	27		II.	Tr.	In.		14	59	55.2	I. *	Ec.	Re.
3	2	32		II.	Sh.	In.		18	29		II.	Sh.	In.	24	9	43		I. *	Tr.	In.
	3	3		II.	Tr.	In.		19	9		I.	Tr.	In.		9	50		II. *	Tr.	In.
	4	19		I.	Sh.	In.		19	11		I.	Sh.	In.		10	2		I. *	Sh.	In.
	4	35		I.	Tr.	In.		20	54		II.	Tr.	Eg.		10	27		II. *	Sh.	In.
	5	5		II.	Sh.	Eg.		21	1		II.	Sh.	Eg.		11	54		I. *	Tr.	Eg.
	5	29		II.	Tr.	Eg.		21	21		I.	Tr.	Eg.		12	15		I. *	Sh.	Eg.
	6	32		I. *	Sh.	Eg.		21	24		I.	Sh.	Eg.		12	18		II. *	Tr.	Eg.
	6	47		I. *	Tr.	Eg.	14	16	21		I. *	Oc.	Dis.		12	59		II. *	Sh.	Eg.
4	1	33	48.7	I.	Ec.	Dis.		18	35	52.9	I.	Ec.	Re.	25	6	57		I. *	Oc.	Dis.
	3	57		I.	Oc.	Re.	15	12	33		III. *	Tr.	In.		9	28	48.8	I. *	Ec.	Re.
	18	36	5.4	III.	Ec.	Dis.		12	42		III. *	Sh.	In.	26	4	9		I.	Tr.	In.
	21	19	37.8	II.	Ec.	Dis.		13	1		II. *	Oc.	Dis		4	20		II.	Oc.	Dis.
	21	20		III.	Oc.	Re.		13	34		I. *	Tr.	In.		4	31		I.	Sh.	In.
	22	47		I.	Sh.	In.		13	39		I. *	Sh.	In.		5	15		III.	Oc.	Dis.
	23	0		I.	Tr.	In.		14	25		III. *	Tr.	Eg.		6	21		I. *	Tr.	Eg.
5	0	8		II.	Oc.	Re.		15	0		III. *	Sh.	Eg.		6	44		I. *	Sh.	Eg.
	1	0		I.	Sh.	Eg.		15	37	31.4	II. *	Ec.	Re.		7	30	13.1	II. *	Ec.	Re.
	1	12		I.	Tr.	Eg.		15	46		I. *	Tr.	Eg.		8	46	37.2	III. *	Ec.	Re.
	20	2	30.4	I.	Ec.	Dis.		15	52		I. *	Sh.	Eg.	27	1	23		I.	Oc.	Dis.
	22	23		I.	Oc.	Re.	16	10	47		I. *	Oc.	Dis.		3	57	35.4	I.	Ec.	Re.
6	15	51		II. *	Sh.	In.		13	4	38.5	I. *	Ec.	Re.		22	35		I.	Tr.	In.
	16	11		II. *	Tr.	In.	17	7	34		II. *	Tr.	In.		22	59		II.	Tr.	In.
	17	16		I. *	Sh.	In.		7	48		II. *	Sh,	In.		23	0		I.	Sh.	In.
	17	26		I. *	Tr.	In.		8	0		I. *	Tr.	In.		23	46		II.	Sh.	In.
	18	24		II.	Sh.	Eg.		8	8		I. *	Sh.	In.	28	0	47		I.	Tr.	Eg.
	18	37		II.	Tr.	Eg.		10	1		II. *	Tr.	Eg.		1	13		I.	Sh.	Eg.
	19	29		I.	Sh.	Eg.		10	12		I. *	Tr.	Eg.		1	27		II.	Tr.	Eg.
	19	38		I.	Tr.	Eg.		10	20		II. *	Sh.	Eg.		2	17		II.	Sh.	Eg.
7	14	31	20.5	I. *	Ec.	Dis.		10	21		I. *	Sh.	Eg.		19	49		I.	Oc.	Dis.
	16	49		I. *	Oc.	Re.	18	5	13		I.	Oc.	Dis.		22	26	29.7	I.	Ec.	Re.
8	8	39		III. *	Sh.	In.		7	33	20.4	I. *	Ec.	Re.	29	17	1		I.	Tr.	In.
	9	19		III. *	Tr.	In.	19	2	1		III.	Oc.	Dis.		17	27		II.	Oc.	Dis.
	10	37		II. *	Ec.	Dis.		2	7		II.	Oc.	Dis.		17	29		I.	Sh.	In.
	10	59		III. *	Sh.	Eg.		2	25		I.	Tr.	In.		19	2		III.	Tr.	In.
	11	7		III. *	Tr.	Eg.		2	37		I.	Sh.	In.		19	13		I.	Tr.	Eg.
	11	45		I. *	Sh.	In.		4	37		I.	Tr.	Eg.		19	41		I.	Sh.	Eg.
	11	51		I. *	Tr.	In.		4	45	48.2	III.	Ec.	Re.		20	46		III.	Sh.	In.
	13	14		II. *	Oc.	Re.		4	50		I.	Sh.	Eg.		20	47	52.4	II.	Ec.	Re.
	13	58		I. *	Sh.	Eg.		4	55	2.7	II.	Ec.	Re.		21	2		III.	Tr.	Eg.
	14	3		I. *	Tr.	Eg.		23	39		I.	Oc.	Dis.		23	2		III.	Sh.	Eg.
9	9	0	5.4	I. *	Ec.	Dis.	20	2	2	15.0	I.	Ec.	Re.	30	14	15		I. *	Oc.	Dis.
	11	15		I. *	Oc.	Re.		20	42		II.	Tr.	In.		16	55	18.0	I.	Ec.	Re.
10	5	10		II.	Sh.	In.		20	51		I.	Tr.	In.	31	11	27		I. *	Tr.	In.
	5	19		II.	Tr.	In.		21	5		I.	Sh.	In.		11	57		I. *	Sh.	In.
	6	13		I. *	Sh.	In.		21	7		II.	Sh.	In.		12	8		II. *	Tr.	In.
	6	17		I. *	Tr.	In.		23	3		I.	Tr.	Eg.		13	6		II. *	Sh.	In.
	7	43		II. *	Sh.	Eg.		23	9		II.	Tr.	Eg.		13	39		I. *	Tr.	Eg.
	7	45		II. *	Tr.	Eg.		23	18		I.	Sh.	Eg.		14	10		I. *	Sh.	Eg.
	8	26		I. *	Sh.	Eg.		23	39		II.	Sh.	Eg.		14	36		II. *	Tr.	Eg.
	8	29		I. *	Tr.	Eg.	21	18	5		I.	Oc.	Dis.		15	37		II. *	Sh.	Eg.
11	3	28	56.4	I.	Ec.	Dis.		20	31	7.6	I.	Ec.	Re.							

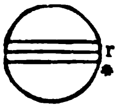
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

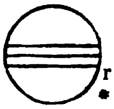
OCTOBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

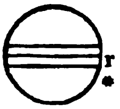
I.



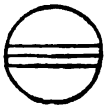
III.



II



IV. No Eclipse.



Configurations at 11h for an Inverting Telescope.

Day.	West.		East.
1	○ 1· 3·	○	·4 ·2 ●
2	3·	○	·1 2· ·4
3	·3 2· 1·	○	·4
4	·2 ·3	○	·1 ·4
5	·1	○	·2 ·3 4·
6		○	2·1· ·3 4·
7	2· ·1	○	3· 4·
8	○ 3·	○	1· 4· ·2 ●
9	3· 4·	○	2· ·1 ●
10	·3 4· 2· 1·	○	
11	4· ·2 ·3	○	·1
12	4· 1·	○	·2 ·3
13	4·	○	2· 1· ·3
14	·4 2· ·1	○	3·
15	·4 ·2	○	3· 1·
16	3· ·4	○	2· ·1 ●
17	·3 2· 1· ·4	○	
18	·2 ·3	○	·1 ·4
19	1·	○	·2 ·3 ·4
20		○	2· ·1 ·3 ·4
21	2· ·1	○	3· ·4
22	·2	○	3·1· 4·
23	3· ·1	○	·2 4·
24	○ 1· ○ 2· 3·	○	4·
25	·2 ·3	○	·1 4·
26	4· 1·	○	·2 ·3
27	4·	○	·12· ·3
28	4· 2· ·1	○	3·
29	4· ·2	○	2· 1·
30	·4 3· ·1	○	·2
31	·4 3·	○	2· 1·

WASHINGTON MEAN TIME.

NOVEMBER.

d	h	m	s			
1	8	42		I.	Oc.	Dis.
	11	24	14.6	I.	Ec.	Re.
2	5	54		I. *	Tr.	In.
	6	26		I. *	Sh.	In.
	6	34		II. *	Oc.	Dis.
	8	7		I. *	Tr.	Eg.
	8	31		III. *	Oc.	Dis.
	8	40		I. *	Sh.	Eg.
	10	5	32.7	II. *	Ec.	Re.
	10	34		III. *	Oc.	Re.
	10	45	35.0	III. *	Ec.	Dis.
	12	47	29.2	III. *	Ec.	Re.
3	3	8		I.	Oc.	Dis.
	5	53	2.4	I. *	Ec.	Re.
4	0	20		I.	Tr.	In.
	0	55		I.	Sh.	In.
	1	17		II.	Tr.	In.
	2	26		II.	Sh.	In.
	2	33		I.	Tr.	Eg.
	3	9		I.	Sh.	Eg.
	3	46		II.	Tr.	Eg.
	4	57		II.	Sh.	Eg.
	21	34		I.	Oc.	Dis.
5	0	21	58.6	I.	Ec.	Re.
	18	46		I.	Tr.	In.
	19	24		I.	Sh.	In.
	19	42		II.	Oc.	Dis.
	20	59		I.	Tr.	Eg.
	21	37		I.	Sh.	Eg.
	22	19		III.	Tr.	In.
	23	23	16.9	II.	Ec.	Re.
6	0	24		III.	Tr.	Eg.
	0	48		III.	Sh.	In.
	3	3		III.	Sh.	Eg.
	16	1		I. *	Oc.	Dis.
	18	50	49.5	I.	Ec.	Re.
7	13	12		I. *	Tr.	In.
	13	53		I. *	Sh.	In.
	14	27		II. *	Tr.	In.
	15	25		I. *	Tr.	Eg.
	15	45		II. *	Sh.	In.
	16	6		I. *	Sh.	Eg.
	16	56		II.	Tr.	Eg.
	18	15		II.	Sh.	Eg.
8	10	27		I. *	Oc.	Dis.
	13	19	46.5	I. *	Ec.	Re.
9	7	39		I. *	Tr.	In.
	8	21		I. *	Sh.	In.
	8	50		II. *	Oc.	Dis.
	9	52		I. *	Tr.	Eg.
	10	34		I. *	Sh.	Eg.
	11	51		III. *	Oc.	Dis.
	12	41	1.7	II. *	Ec.	Re.
	13	58		III. *	Oc.	Re.
	14	48	4.8	III. *	Ec.	Dis.
	16	48	35.2	III.	Ec.	Re.
10	4	54		I.	Oc.	Dis.
	7	48	36.1	I. *	Ec.	Re.
11	2	5		I.	Tr.	In.
	2	50		I.	Sh.	In.
	3	36		II.	Tr.	In.
	4	18		I.	Tr.	Eg.
11	5	3		I. *	Sh.	Eg.
	5	5		II. *	Sh.	In.
	6	6		II. *	Tr.	Eg.
	7	35		II. *	Sh.	Eg.
	23	20		I.	Oc.	Dis.
12	2	17	33.4	I.	Ec.	Re.
	20	32		I.	Tr.	In.
	21	19		I.	Sh.	In.
	21	59		II.	Oc.	Dis.
	22	45		I.	Tr.	Eg.
	23	32		I.	Sh.	Eg.
13	1	41		III.	Tr.	In.
	1	58	50.9	II.	Ec.	Re.
	3	50		III.	Tr.	Eg.
	4	51		III.	Sh.	In.
	7	4		III. *	Sh.	Eg.
	17	47		I.	Oc.	Dis.
	20	46	25.7	I.	Ec.	Re.
14	14	58		I.	Tr.	In.
	15	47		I. *	Sh.	In.
	16	46		II.	Tr.	In.
	17	11		I.	Tr.	Eg.
	18	0		I.	Sh.	Eg.
	18	24		II.	Sh.	In.
	19	17		II.	Tr.	Eg.
	20	54		II.	Sh.	Eg.
15	12	14		I. *	Oc.	Dis.
	15	15	24.1	I. *	Ec.	Re.
16	9	25		I. *	Tr.	In.
	10	16		I. *	Sh.	In.
	11	8		II. *	Oc.	Dis.
	11	38		I. *	Tr.	Eg.
	12	29		I. *	Sh.	Eg.
	15	15		III. *	Oc.	Dis.
	15	16	40.5	II. *	Ec.	Re.
	17	27		III.	Oc.	Re.
	18	51	15.5	III.	Ec.	Dis.
	20	50	22.7	III.	Ec.	Re.
17	6	41		I. *	Oc.	Dis.
	9	44	15.1	I. *	Ec.	Re.
18	3	51		I.	Tr.	In.
	4	45		I.	Sh.	In.
	5	57		II. *	Tr.	In.
	6	4		I. *	Tr.	Eg.
	6	58		I. *	Sh.	Eg.
	7	44		II. *	Sh.	In.
	8	27		II. *	Tr.	Eg.
	10	14		II. *	Sh.	Eg.
19	1	8		I.	Oc.	Dis.
	4	13	13.3	I.	Ec.	Re.
	22	18		I.	Tr.	In.
	23	14		I.	Sh.	In.
20	0	18		II.	Oc.	Dis.
	0	31		I.	Tr.	Eg.
	1	27		I.	Sh.	Eg.
	4	34	35.0	II.	Ec.	Re.
	5	6		III. *	Tr.	In.
	7	20		III. *	Tr.	Eg.
	8	53		III. *	Sh.	In.
	11	5		III. *	Sh.	Eg.
	19	35		I.	Oc.	Dis.
	22	42	6.8	I.	Ec.	Re.
21	16	45		I.	Tr.	In.
	17	43		I.	Sh.	In.
	18	58		I.	Tr.	Eg.
	19	8		II.	Tr.	In.
	19	56		I.	Sh.	Eg.
	21	3		II.	Sh.	In.
	21	39		II.	Tr.	Eg.
	23	33		II.	Sh.	Eg.
22	14	2		I. *	Oc.	Dis.
	17	11	6.2	I.	Ec.	Re.
23	11	12		I. *	Tr.	In.
	12	11		I. *	Sh.	In.
	13	25		I. *	Tr.	Eg.
	13	28		II. *	Oc.	Dis.
	14	24		I. *	Sh.	Eg.
	17	52	29.8	II.	Ec.	Re.
	18	44		III.	Oc.	Dis.
	20	59		III.	Oc.	Re.
	22	54	11.1	III.	Ec.	Dis.
24	0	51	56.5	III.	Ec.	Re.
	8	27		I. *	Oc.	Dis.
	11	39	58.1	I. *	Ec.	Re.
25	5	39		I. *	Tr.	In.
	6	40		I. *	Sh.	In.
	7	52		I. *	Tr.	Eg.
	8	20		II. *	Tr.	In.
	8	53		I. *	Sh.	Eg.
	10	23		II. *	Sh.	In.
	10	51		II. *	Tr.	Eg.
	12	53		II. *	Sh.	Eg.
26	2	56		I.	Oc.	Dis.
	6	8	57.4	I. *	Ec.	Re.
27	0	6		I.	Tr.	In.
	1	9		I.	Sh.	In.
	2	19		I.	Tr.	Eg.
	2	39		II.	Oc.	Dis.
	3	22		I.	Sh.	Eg.
	7	10	28.9	II. *	Ec.	Re.
	8	37		III. *	Tr.	In.
	10	54		III. *	Tr.	Eg.
	12	55		III. *	Sh.	In.
	15	6		III.	Sh.	Eg.
	21	23		I.	Oc.	Dis.
28	0	37	51.8	I.	Ec.	Re.
	18	33		I.	Tr.	In.
	19	38		I.	Sh.	In.
	20	46		I.	Tr.	Eg.
	21	33		II.	Tr.	In.
	21	51		I.	Sh.	Eg.
	23	42		II.	Sh.	In.
29	0	5		II.	Tr.	Eg.
	2	12		II.	Sh.	Eg.
	15	51		I.	Oc.	Dis.
	19	6	52.3	I.	Ec.	Re.
30	13	0		I. *	Tr.	In.
	14	7		I. *	Sh.	In.
	15	14		I.	Tr.	Eg.
	15	51		II.	Oc.	Dis.
	16	20		I.	Sh.	Eg.
	20	28	28.8	II.	Ec.	Re.
	22	18		III.	Oc.	Dis.

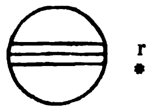
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite, Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

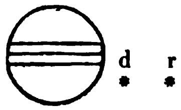
NOVEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

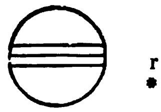
I.



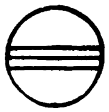
III.



II.



IV No Eclipse.



Configurations at 10ʰ for an Inverting Telescope.

Day.	West.		East.
1	·4 ·3 2·	○	·1 ●
2	·4 1·	○	·2 ·3 ●
3		○	·4 ·1 2· ·3
4	2· 1·	○	·4 3·
5	·2	○	1· 3· ·4
6	3· ·1	○	·2 ·4
7	3·	○	2· 1· 4·
8	·3 2· ·1	○	4·
9	1· ·3	○	4· ·2 ●
10		○	·1 2· 4· ·3
11	1·2·	○	4· 3·
12	·2 4·	○	·1 3·
13	4· ·13·	○	·2
14	4· 3·	○	2· 1·
15	4· ·3 2· ·1	○	
16	○ 1· ·4 ·3 ·2	○	
17	·4	○	·1 2· 3·
18	·4 1· 2·	○	·3
19	·2 ·4	○	·1 3·
20	1· 3·	○	·2 ·4
21	3·	○	2· 1· ·4
22	·3 2· ·1	○	·4
23	·3 ·2	○	1· ·4
24		○	·3 ·2 4· ·1 ●
25	○ 2· 1·	○	·3 4·
26	·2	○	·1 3· 4·
27	○ 3· 1·	○	·2 4·
28	3· 4·	○	1· 2·
29	·3 4· 2· ·1	○	
30	4· ·3 ·2	○	1·

WASHINGTON MEAN TIME.

DECEMBER.

d	h	m	s			
1	0	37		III.	Oc.	Re.
	2	57	34.5	III.	Ec.	Dis.
	4	53	59.5	III.	Ec.	Re.
	10	18		I. *	Oc.	Dis.
	13	35	45.1	I. *	Ec.	Re.
2	7	27		I. *	Tr.	In.
	8	36		I. *	Sh.	In.
	9	41		I. *	Tr.	Eg.
	10	46		II. *	Tr.	In.
	10	49		I. *	Sh.	Eg.
	13	2		II. *	Sh.	In.
	13	18		II. *	Tr.	Eg.
	15	31		II.	Sh.	Eg.
3	4	45		I.	Oc.	Dis.
	8	4	45.1	I. *	Ec.	Re.
4	1	54		I.	Tr.	In.
	3	4		I.	Sh.	In.
	4	8		I.	Tr.	Eg.
	5	3		II. *	Oc.	Dis.
	5	17		I. *	Sh.	Eg.
	9	46	33.0	II. *	Ec.	Re.
	12	13		III. *	Tr.	In.
	14	33		III.	Tr.	Eg.
	16	58		III.	Sh.	In.
	19	8		III.	Sh.	Eg.
	23	13		I.	Oc.	Dis.
5	2	33	40.1	I.	Ec.	Re.
	20	22		I.	Tr.	In.
	21	33		I.	Sh.	In.
	22	36		I.	Tr.	Eg.
	23	46		I.	Sh.	Eg.
6	0	0		II.	Tr.	In.
	2	21		II.	Sh.	In.
	2	32		II.	Tr.	Eg.
	4	50		II.	Sh.	Eg.
	17	41		I.	Oc.	Dis.
	21	2	41.2	I.	Ec.	Re.
7	14	50		I.	Tr.	In.
	16	2		I.	Sh.	In.
	17	4		I.	Tr.	Eg.
	18	15		I.	Sh.	Eg.
	18	16		II.	Oc.	Dis.
	23	4	38.2	II.	Ec.	Re.
8	1	56		III.	Oc.	Dis.
	4	19		III.	Oc.	Re.
	7	0	22.7	III. *	Ec.	Dis.
	8	55	28.5	III. *	Ec.	Re.
	12	8		I. *	Oc.	Dis.
	15	31	34.9	I.	Ec.	Re.
9	9	18		I. *	Tr.	In.
	10	31		I. *	Sh.	In.
	11	32		I. *	Tr.	Eg.
	12	44		I. *	Sh.	Eg.
	13	14		II. *	Tr.	In.
	15	41		II.	Sh.	In.
	15	47		II.	Tr.	Eg.
	18	10		II.	Sh.	Eg.
10	6	36		I. *	Oc.	Dis.
	10	0	35.1	I. *	Ec.	Re.
11	3	45		I.	Tr.	In.
	5	0		I.	Sh.	In.
	5	59		I. *	Tr.	Eg.
	7	13		I. *	Sh.	Eg.
	7	29		II. *	Oc.	Dis
11	12	22	46.5	II. *	Ec.	Re.
	15	54		III.	Tr.	In.
	18	17		III.	Tr.	Eg.
	21	0		III.	Sh.	In.
	23	9		III.	Sh.	Eg.
12	1	4		I.	Oc.	Dis.
	4	29	30.5	I.	Ec.	Re.
	22	13		I.	Tr.	In.
	23	28		I.	Sh.	In.
13	0	27		I.	Tr.	Eg.
	1	41		I.	Sh.	Eg.
	2	29		II.	Tr.	In.
	5	0		II.	Sh.	In.
	5	3		II.	Tr.	Eg.
	7	29		II. *	Sh.	Eg.
	19	32		I.	Oc.	Dis.
	22	58	31.9	I.	Ec.	Re.
14	16	41		I.	Tr.	In.
	17	57		I.	Sh.	In.
	18	55		I.	Tr.	Eg.
	20	10		I.	Sh.	Eg.
	20	43		II.	Oc.	Dis.
15	1	40	57.6	II.	Ec.	Re.
	5	40		III. *	Oc.	Dis.
	8	5		III. *	Oc.	Re.
	11	3	5.1	III. *	Ec.	Dis.
	12	56	52.3	III. *	Ec.	Re.
	14	0		I.	Oc.	Dis.
	17	27	25.9	I.	Ec.	Re
16	11	9		I. *	Tr.	In.
	12	26		I. *	Sh.	In.
	13	23		I. *	Tr.	Eg.
	14	39		I.	Sh.	Eg
	15	45		II.	Tr.	In.
	18	19		II.	Sh.	In.
	18	19		II.	Tr.	Eg.
	20	48		II.	Sh.	Eg.
17	8	28		I. *	Oc.	Dis
	11	56	26.3	I. *	Ec.	Re.
18	5	37		I. *	Tr.	In.
	6	55		I. *	Sh.	In.
	7	51		I. *	Tr.	Eg.
	9	8		I. *	Sh.	Eg.
	9	58		II. *	Oc.	Dis
	14	59	9 9	II.	Ec.	Re.
	19	41		III.	Tr.	In.
	22	7		III.	Tr.	Eg.
19	1	4		III.	Sh.	In.
	2	56		I.	Oc.	Dis.
	3	11		III.	Sh.	Eg.
	6	25	22.1	I. *	Ec.	Re.
20	0	5		I.	Tr.	In.
	1	24		I.	Sh.	In.
	2	19		I.	Tr.	Eg.
	3	37		I.	Sh.	Eg.
	5	1		II.	Tr.	In.
	7	35		II. *	Tr.	Eg.
	7	38		II. *	Sh.	In.
	10	6		II. *	Sh.	Eg.
	21	25		I.	Oc.	Dis.
21	0	54	23.8	I.	Ec.	Re.
	18	33		I.	Tr.	In.
	19	53		I.	Sh.	In.
	20	47		I.	Tr.	Eg.
21	22	6		I.	Sh.	Eg.
	23	13		II.	Oc.	Dis.
22	4	17	26 5	II.	Ec.	Re.
	9	30		III. *	Oc.	Dis.
	11	57		III. *	Oc.	Re.
	15	5	45.4	III.	Ec.	Dis.
	15	53		I.	Oc.	Dis.
	16	58	14.8	III.	Ec.	Re.
	19	23	18.0	I.	Ec.	Re.
23	13	2		I.	Tr.	In.
	14	22		I.	Sh.	In.
	15	16		I.	Tr.	Eg.
	16	35		I.	Sh.	Eg.
	18	18		II.	Tr.	In
	20	52		II.	Tr.	Eg.
	20	58		II.	Sh.	In.
	23	26		II.	Sh.	Eg.
24	10	22		I. *	Oc.	Dis.
	13	52	18 2	I.	Ec.	Re.
25	7	30		I. *	Tr.	In.
	8	50		I. *	Sh	In.
	9	44		I. *	Tr.	Eg.
	11	3		I *	Sh.	Eg.
	12	30		II *	Oc.	Dis
	17	35	42.4	II.	Ec.	Re.
	23	33		III.	Tr.	In
26	2	1		III.	Tr.	Eg.
	4	50		I.	Oc.	Dis.
	5	7		III.	Sh.	In.
	7	12		III. *	Sh.	Eg
	8	21	14.0	I. *	Ec.	Re.
27	1	58		I.	Tr	In
	3	19		I.	Sh	In
	4	12		I.	Tr.	Eg
	5	32		I. *	Sh.	Eg.
	7	35		II. *	Tr.	In
	10	9		II. *	Tr.	Eg
	10	17		II. *	Sh.	In.
	12	45		II. *	Sh.	Eg.
	23	19		I.	Oc.	Dis.
28	2	50	15.6	I.	Ec.	Re.
	20	27		I.	Tr.	In.
	21	48		I.	Sh.	In.
	22	42		I.	Tr	Eg
29	0	1		I.	Sh.	Eg.
	1	47		II.	Oc.	Dis.
	6	54	5 0	II. *	Ec.	Re.
	13	24		III.	Oc.	Dis
	15	52		III.	Oc.	Re.
	17	47		I.	Oc.	Dis.
	19	8	33.6	III.	Ec.	Dis.
	20	59	45.6	III.	Ec.	Re.
	21	19	10.0	I.	Ec.	Re.
30	14	56		I.	Tr.	In.
	16	17		I.	Sh.	In.
	17	10		I.	Tr.	Eg.
	18	30		I.	Sh.	Eg.
	20	53		II.	Tr.	In.
	23	28		II.	Tr.	Eg.
	23	37		II.	Sh.	In.
31	2	5		II.	Sh.	Eg.
	12	16		I.	Oc.	Dis.
	15	48	9.9	I.	Ec.	Re.

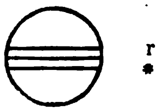
NOTE.—In. denotes ingress; Eg., egress: Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation: Tr., transit of the satellite: Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

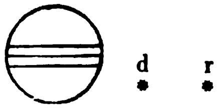
DECEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

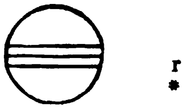
I.



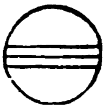
III.



II.

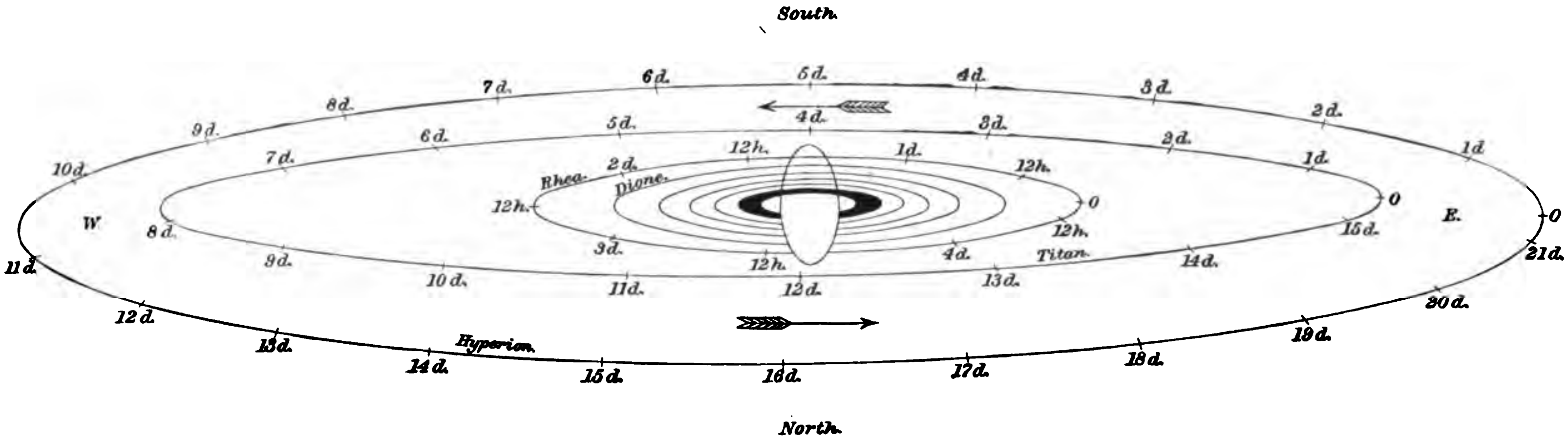


IV. No Eclipse.



Configurations at 9h for an Inverting Telescope.

Day.	West.	East.
1	4· ·1	·3 ·2
2	○ 1· ·4	2· ·3
3	·4 2·	·1 3·
4	·4 1·	3· ·2
5	3· ·4	·1 2·
6	·3 2· ·1 ·4	
7	·3 ·2	1· ·4
8	·1	·3 ·2 ·4
9		1· 2· ·3 ·4
10	2·	·1 3· ·4
11	1·	3· 4· ·2 ●
12	3·	·1 2· 4·
13	3· 1· 2·	4·
14	·3 ·2	4·1·
15	4··1	·3 ·2
16	4·	1· 2· ·3
17	4· 2·	3· ·1 ●
18	4· 1··2	3·
19	·4 3·	·1 2·
20	·4 3· 1· 2·	
21	·4 ·3 ·2	·1
22	·4 ·1	·2 ·3 ●
23		·4 1· 2· ·3
24	2· ·1	·4 3·
25	○ 1· ·2	3· ·4
26	3·	·1 ·2 ·4
27	○ 2· 3· 1·	·4
28	·3 ·2	·1 4·
29	·1 ·3	·2 4·
30		1· 2· ·3 4·
31	2· ·1	4· ·3



Names of the Satellites.	
I.	Mimas.
II.	Enceladus.
III.	Tethys.
IV.	Dione.
V.	Rhea.
VI.	Titan.
VII.	Hyperion.
VIII.	Iapetus.

APPARENT ORBITS OF THE SEVEN INNER SATELLITES OF SATURN,

AT OPPOSITION IN 1892,

AS SEEN IN AN INVERTING TELESCOPE.

(*THE VERTICAL SCALE IS TWICE THE HORIZONTAL ONE.*)

Mean Synodic Periods.	d	h
I.	0	22.6
II.	1	8.9
III.	1	21.3
IV.	2	17.7
V.	4	12.5
VI.	15	23.3
VII.	21	7.8
VIII.	79	22.0

WASHINGTON MEAN TIME OF GREATEST ELONGATION, ETC.

In the diagram on the preceding page, the points of the orbits marked "o" are those of the eastern elongation, as seen in an inverting telescope. The apparent positions of a satellite at any time may be marked on the diagram by counting around the orbit the interval in days and hours which has elapsed since the last east elongation. The times of these elongations may be found from the following tables. Mimas can be seen only within a few hours of each elongation: the time of every elongation visible at Washington is therefore given. The times of other elongations of any satellite in the same direction may be found by adding or subtracting any multiple of the period. For the three outer satellites the times of elongation and conjunction are given. The following abbreviations are used:—

E., East Elongation,
I., Inferior Conjunction (south of planet),
W., West Elongation,
S., Superior Conjunction (north of planet).

MIMAS.

Greatest Elongations Visible at Washington.

d h	d h	d h	d h	d h	d h
Jan. 2 17.8 E.	Feb. 5 16.5 E.	Mar. 3 13.5 W.	Mar. 30 10.5 E.	Apr. 24 9.8 W.	May 27 9.4 W.
3 16.4 E.	6 15.1 E.	4 12.1 W.	31 9.1 E.	25 8.4 W.	28 8.0 W.
4 15.1 E.	7 13.8 E.	5 10.7 W.	Apr. 1 7.7 E.	29 14.2 E.	June 2 12.4 E.
5 13.7 E.	8 12.5 E.	6 9.3 W.	4 14.8 W.	30 12.8 E.	3 11.0 E.
10 18.2 W.	9 11.1 E.	9 16.5 E.	5 13.4 W.	May 1 11.4 E.	4 9.6 E.
11 16.8 W.	13 16.9 W.	10 15.2 E.	6 12.1 W.	2 10.0 E.	5 8.2 E.
12 15.4 W.	14 15.5 W.	11 13.8 E.	7 10.7 W.	3 8.6 E.	10 12.6 W.
13 14.1 W.	15 14.1 W.	12 12.4 E.	8 9.3 W.	8 13.0 W.	11 11.3 W.
14 12.7 W.	16 12.7 W.	13 11.1 E.	9 7.9 W.	9 11.6 W.	12 9.9 W.
19 17.2 E.	17 11.4 W.	14 9.7 E.	12 15.1 E.	10 10.3 W.	Dec. 16 12.8 E.
20 15.9 E.	18 10.0 W.	18 15.8 W.	13 13.7 E.	11 8.9 W.	17 11.4 E.
21 14.4 E.	21 17.2 E.	19 14.4 W.	14 12.3 E.	12 7.5 W.	20 18.7 W.
22 13.0 E.	22 15.8 E.	20 13.0 W.	15 10.9 E.	16 13.3 E.	21 17.3 W.
23 11.7 E.	23 14.5 E.	21 11.6 W.	16 9.5 E.	17 11.9 E.	22 15.9 W.
27 17.5 W.	24 13.1 E.	22 10.2 W.	17 8.2 E.	18 10.5 E.	23 14.5 W.
28 16.2 W.	25 11.7 E.	23 8.8 W.	20 15.3 W.	19 9.1 E.	24 13.1 W.
29 14.8 W.	26 10.4 E.	27 14.6 E.	21 13.9 W.	20 7.8 E.	29 17.5 E.
30 13.4 W.	Mar. 1 16.2 W.	28 13.2 E.	22 12.6 W.	25 12.1 W.	30 16.2 E.
31 12.0 W.	2 14.8 W.	29 11.8 E.	23 11.2 W.	26 10.8 W.	31 14.8 E.

ENCELADUS.

d h	d h	d h	d h	d h	d h
Jan. 2 4.9 E.	Jan. 15 21.7 E.	Jan. 29 14.5 E.	Feb. 12 7.3 E.	Feb. 26 0.1 E.	Mar. 10 16.9 E.
3 13.7 E.	17 6.5 E.	30 23.4 E.	13 16.2 E.	27 9.0 E.	12 1.8 E.
4 22.6 E.	18 15.4 E.	Feb. 1 8.2 E.	15 1.0 E.	28 17.8 E.	13 10.6 E.
6 7.5 E.	20 0.3 E.	2 17.1 E.	16 9.9 E.	Mar. 1 2.7 E.	14 19.5 E.
7 16.4 E.	21 9.2 E.	4 2.0 E.	17 18.8 E.	2 11.6 E.	16 4.6 E.
9 1.3 E.	22 18.1 E.	5 10.9 E.	19 3.7 E.	3 20.5 E.	17 13.5 E.
10 10.2 E.	24 2.9 E.	6 19.7 E.	20 12.5 E.	5 5.4 E.	18 22.3 E.
11 19.0 E.	25 11.8 E.	8 4.6 E.	21 21.4 E.	6 14.2 E.	20 7.2 E.
13 3.9 E.	26 20.7 E.	9 13.5 E.	23 6.3 E.	7 23.1 E.	21 16.1 E.
14 12.8 E.	28 5.7 E.	10 22.5 E.	24 15.3 E.	9 8.0 E.	23 1.0 E.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

ENCELADUS—(*Concluded.*)

	d	h		d	h		d	h		d	h		d	h		d	h
Mar.	24	9.8 E.	Apr.	11	5.3 E.	Apr.	29	0.7 E.	May	16	20.2 E.	June	3	15.7 E.	Dec.	15	7.0 E.
	25	18.7 E.		12	14.2 E.		30	9.6 E.		18	5.1 E.		5	0.5 E.		16	15.9 E.
	27	3.6 E.		13	23.1 E.	May	1	18.5 E.		19	14.0 E.		6	9.4 E.		18	0.8 E.
	28	12.5 E.		15	7.9 E.		3	3.4 E.		20	22.9 E.		7	18.3 E.		19	9.6 E.
	29	21.4 E.		16	16.8 E.		4	12.3 E.		22	7.7 E.		9	3.2 E.		20	18.5 E.
	31	6.3 E.		18	1.7 E.		5	21.2 E.		23	16.6 E.		10	12.1 E.		22	3.4 E.
Apr.	1	15.1 E.		19	10.6 E.		7	6.0 E.		25	1.5 E.		11	20.9 E.		23	12.3 E.
	3	0.0 E.		20	19.5 E.		8	14.9 E.		26	10.4 E.		13	5.8 E.		24	21.1 E.
	4	8.9 E.		22	4.3 E.		9	23.8 E.		27	19.3 E.		14	14.7 E.		26	5.9 E.
	5	17.8 E.		23	13.2 E.		11	8.7 E.		29	4.1 E.		15	23.6 E.		27	14.8 E.
	7	2.7 E.		24	22.1 E.		12	17.6 E.		30	13.0 E.		17	8.5 E.		28	23.7 E.
	8	11.5 E.		26	7.0 E.		14	2.4 E.		31	21.9 E.	Dec.	12	13.2 E.		30	8.6 E.
	9	20.4 E.		27	15.9 E.		15	11.3 E.	June	2	6.8 E.		13	22.1 E.		31	17.5 E.

TETHYS.

	d	h		d	h		d	h		d	h		d	h		d	h
Jan.	2	19.5 E.	Feb.	5	18.9 E.	Mar.	10	18.3 E.	Apr.	13	17.8 E.	May	17	17.1 E.	June	20	16.5 E.
	4	16.8 E.		7	16.2 E.		12	15.6 E.		15	15.1 E.		19	14.4 E.		22	13.8 E.
	6	14.1 E.		9	13.5 E.		14	13.0 E.		17	12.4 E.		21	11.7 E.		24	11.1 E.
	8	11.4 E.		11	10.8 E.		16	10.3 E.		19	9.7 E.		23	9.0 E.	Dec.	7	16.4 E.
	10	8.7 E.		13	8.1 E.		18	7.6 E.		21	7.0 E.		25	6.3 E.		9	13.7 E.
	12	6.0 E.		15	5.4 E.		20	4.9 E.		23	4.5 E.		27	3.6 E.		11	11.1 E.
	14	3.3 E.		17	2.7 E.		22	2.2 E.		25	1.6 E.		29	0.9 E.		13	8.4 E.
	16	0.6 E.		19	0.0 E.		23	23.5 E.		26	22.9 E.		30	22.2 E.		15	5.7 E.
	17	21.9 E.		20	21.3 E.		25	20.8 E.		28	20.2 E.	June	1	19.5 E.		17	2.9 E.
	19	19.2 E.		22	18.6 E.		27	18.1 E.		30	17.5 E.		3	16.8 E.		19	0.2 E.
	21	16.5 E.		24	15.9 E.		29	15.4 E.	May	2	14.8 E.		5	14.1 E.		20	21.6 E.
	23	13.8 E.		26	13.2 E.		31	12.7 E.		4	12.1 E.		7	11.4 E.		22	18.9 E.
	25	11.1 E.		28	10.5 E.	Apr.	2	10.0 E.		6	9.4 E.		9	8.7 E.		24	16.2 E.
	27	8.4 E.	Mar.	1	7.8 E.		4	7.3 E.		8	6.7 E.		11	6.0 E.		26	13.5 E.
	29	5.7 E.		3	5.1 E.		6	4.6 E.		10	4.0 E.		13	3.3 E.		28	10.8 E.
	31	3.0 E.		5	2.4 E.		8	1.9 E.		12	1.2 E.		15	0.6 E.		30	8.1 E.
Feb.	2	0.3 E.		6	23.7 E.		9	23.2 E.		13	22.7 E.		16	21.9 E.		32	5.4 E.
	3	21.6 E.		8	21.0 E.		11	20.5 E.		15	19.8 E.		18	19.2 E.		34	2.7 E.

DIONE.

	d	h		d	h		d	h		d	h		d	h		d	h
Jan.	2	2.9 E.	Feb.	3	23.0 E.	Mar.	7	19.2 E.	Apr.	9	15.3 E.	May	12	11.3 E.	June	14	7.2 E.
	4	20.6 E.		6	16.7 E.		10	12.9 E.		12	8.9 E.		15	4.9 E.		17	0.9 E.
	7	14.2 E.		9	10.4 E.		13	6.6 E.		15	2.6 E.		17	22.6 E.		19	18.5 E.
	10	7.9 E.		12	4.1 E.		16	0.3 E.		17	20.3 E.		20	16.3 E.	Dec.	9	8.1 E.
	13	1.6 E.		14	21.8 E.		18	17.9 E.		20	13.9 E.		23	9.9 E.		12	1.8 E.
	15	19.3 E.		17	15.4 E.		21	11.6 E.		23	7.6 E.		26	3.6 E.		14	19.5 E.
	18	12.9 E.		20	9.1 E.		24	5.3 E.		26	1.3 E.		28	21.3 E.		17	13.2 E.
	21	6.6 E.		23	2.8 E.		26	23.0 E.		28	18.9 E.		31	14.9 E.		20	6.8 E.
	24	0.3 E.		25	20.5 E.		29	16.6 E.	May	1	12.6 E.	June	3	8.6 E.		23	0.5 E.
	26	18.0 E.		28	14.2 E.	Apr.	1	10.3 E.		4	6.3 E.		6	2.2 E.		25	18.2 E.
	29	11.7 E.	Mar.	2	7.8 E.		4	4.0 E.		6	23.9 E.		8	19.9 E.		28	11.9 E.
Feb.	1	5.4 E.		5	1.5 E.		6	21.6 E.		9	17.6 E.		11	13.6 E.		31	5.6 E.

RHEA.						TITAN.						HYPERION.					
	d	h		d	h		d	h		d	h		d	h		d	h
Jan.	1	2.8 E.	Apr.	9	11.1 E.	Jan.	3	18.8 E.	Mar.	31	6.0 W.	Jan.	2	9.1 W.	Apr.	26	20.4 E.
	5	15.2 E.		13	23.5 E.		7	13.9 I.	Apr.	4	9.3 S.		7	8.1 S.	May	2	11.0 I.
	10	3.5 E.		18	11.8 E.		11	15.7 W.		8	5.7 E.		11	19.0 E.		8	16.5 W.
	14	15.9 E.		23	0.2 E.		15	19.2 S.		12	1.3 I.		17	9.9 I.		13	15.2 S.
	19	4.3 E.		27	12.6 E.		19	17.5 E.		16	3.6 W.		23	15.7 W.		18	2.5 E
	23	16.7 E.	May	2	0.9 E.		23	12.6 I.		20	7.0 S.		28	14.2 S.		23	17.3 I.
	28	5.1 E.		6	13.3 E.		27	14.4 W.		24	3.4 E.	Feb.	2	0.9 E.		29	23.1 W
Feb.	1	17.4 E.		11	1.6 E.		31	17.9 S.		27	23.2 I.		7	15.9 I.	June	3	21.5 S.
	6	5.8 E.		15	14.0 E.	Feb.	4	16.1 E.	May	2	1.4 W.		13	21.2 W.	Oct.	20	15.0 I.
	10	18.2 E.		20	2.4 E.		8	10.9 I.		6	5.0 S.		18	19.4 S.		26	16.2 W.
	15	6.6 E.		24	14.7 E.		12	12.7 W.		10	1.8 E.		23	6.0 E.		31	9.1 S.
	19	18.9 E.		29	2.9 E.		16	16.1 S.		13	21.7 I.		28	20.6 I.	Nov.	5	0.5 E.
	24	7.3 E.	June	2	15.2 E.		20	14.4 E.		17	23.8 W.	Mar.	6	1.8 W.		11	1.4 I.
	28	19.7 E.		7	3.6 E.		24	9.0 I.		22	3.4 S.		10	23.6 S.		17	1.8 W.
Mar.	4	8.1 E.		11	16.0 E.		28	10.7 W.		26	0.2 E.		15	10.6 E.		21	17.7 S.
	8	20.5 E.		16	4.3 E.	Mar.	3	14.1 S.		29	20.1 I.		21	1.2 I.		26	9.7 E.
	13	8.8 E.	Dec.	9	14.2 E.		7	12.4 E.	Dec.	12	1.0 W.		27	6.5 W.	Dec.	2	11.7 I.
	17	21.2 E.		14	2.6 E.		11	6.8 I.		16	4.3 S.	Apr.	1	4.7 S.		8	12.5 W.
	22	9.6 E.		18	14.9 E.		15	8.5 W.		20	1.0 E.		5	15.2 E.		13	4.0 S.
	26	22.0 E.		23	3.3 E.		19	11.8 S.		23	21.3 I.		11	5.8 I.		17	20.5 E.
	31	10.3 E.		27	15.7 E.		23	8.2 E.		28	0.5 W.		17	11.3 W.		23	21.9 I.
Apr.	4	22.7 E.		32	4.0 E.		27	3.8 I.		32	3.7 S.		22	9.6 S.		29	22.3 W

IAPETUS.																	
	d	h		d	h		d	h		d	h		d	h		d	h
Jan.	11	1.5 S.	Mar.	9	12.2 W.	May	7	17.4 I.	July	7	5.0 E.	Sept.	26	23.0 E.	Nov.	25	12.1 S.
	31	18.1 E.		29	11.4 S.		26	23.8 W.		26	13.5 I.	Oct.	15	16.7 I.	Dec.	16	16.0 E.
Feb.	19	8.8 I.	Apr.	18	23.0 E.	June	16	8.9 S.	Aug.	15	2.7 W.	Nov.	4	20.4 W.		35	8.8 I.

THE APPARENT ELEMENTS OF SATURN'S RINGS.

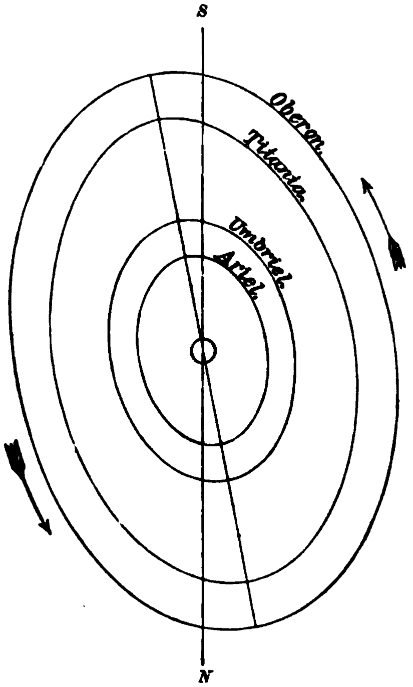
Greenwich Mean Noon.		*a* Outer Major Axis.	*b* Outer Minor Axis.	*p* Inclination of Northern Semi-Minor Axis to Circle of Declination from North to East.	*l* The Elevation of the Earth above the Plane of the Ring.	*l′* The Elevation of the Sun above the Plane of the Ring.	*u* Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on Equator.	*u′* Ecliptic.
Jan.	1	40″.68	2″.59	− 4° 5′.5	+ 3° 39′.2	+ 0° 56′.4	234° 9′.4	191° 40′.2
	21	42.09	2.60	− 4 5.6	+ 3 32.2	+ 1 16.1	234 8.4	191 39.3
Feb.	10	43.29	2.35	− 4 9.4	+ 3 6.7	+ 1 34.5	233 30.1	191 1.1
Mar.	1	44.06	1.88	− 4 16.1	+ 2 27.5	+ 1 52.8	232 22.8	189 54.0
	21	44.23	1.32	− 4 24.1	+ 1 42.7	+ 2 11.1	231 1.1	188 32.2
Apr.	10	43.77	0.78	− 4 31.7	+ 1 1.8	+ 2 29.4	229 42.5	187 13.8
	30	42.78	0.40	− 4 38.2	+ 0 32.4	+ 2 47.6	228 43.4	186 14.7
May	20	41.47	0.27	− 4 40.0	+ 0 22.2	+ 3 5.8	228 14.8	185 46.2
June	9	40.05	0.36	− 4 39.3	+ 0 30.6	+ 3 23.9	228 21.8	185 53.3
	29	38.69	0.65	− 4 35.3	+ 0 57.4	+ 3 42.1	229 3.5	186 35.1
July	19	37.51	1.09	− 4 28.3	+ 1 40.0	+ 4 0.1	230 16.4	187 48.1
Aug.	8	36.58	1.64	− 4 18.7	+ 2 34.7	+ 4 18.1	231 54.3	189 26.1
	28	35.95	2.27	− 4 7.2	+ 3 37.6	+ 4 36.1	233 50.9	191 22.8
Sept.	17	35.64	2.95	− 3 54.3	+ 4 44.6	+ 4 53.9	235 58.9	193 30.9
Oct.	7	35.67	3.64	− 3 40.7	+ 5 51.6	+ 5 11.8	238 11.4	195 43.4
	27	36.03	4.33	− 3 27.2	+ 6 54.6	+ 5 29.6	240 20.5	197 52.6
Nov.	16	36.72	5.00	− 3 14.7	+ 7 49.4	+ 5 47.3	242 17.9	199 50.1
Dec.	6	37.72	5.60	− 3 4.2	+ 8 32.2	+ 6 4.9	243 55.1	201 27.4
	26	38.96	6.09	− 2 56.7	+ 8 59.5	+ 6 22.5	245 3.7	202 36.0
	31	39.30	6.19	− 2 55.4	+ 9 3.7	+ 6 26.9	245 15.5	202 47.8

The factor to be multiplied by *a* and *b* to obtain the axes of—

The inner ellipse of the outer ring	= 0.8801	log factor = 9.9445
The outer ellipse of the inner ring	= 0.8599	log factor = 9.9344
The inner ellipse of the inner ring	= 0.6650	log factor = 9.8228
The inner ellipse of the dusky ring	= 0.5486	log factor = 9.7392

NOTE.—The positive sign of *l* indicates that the visible surface of the ring is the northern one.

Date.	Position Angle.	App. Distances Ariel.	App. Distances Umbriel.
	°	″	″
Jan. 16,	7.6	14.2	19.7
May 30,	9.1	14.9	20.8



Date.	Position Angle.	App. Distances Titania.	App. Distances Oberon.
	°	″	″
Jan. 16,	7.6	32.4	43.3
May 30,	9.1	34.1	45.6

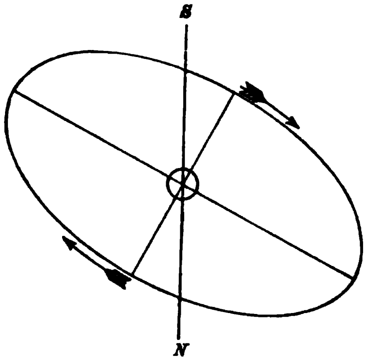
APPARENT ORBITS OF THE SATELLITES OF URANUS IN 1892, AS SEEN IN AN INVERTING TELESCOPE.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

ARIEL.						UMBRIEL.						TITANIA.						OBERON.			
North.			South.			North.			South.			North.			South.			North and South.			
	d	h		d	h		d	h		d	h		d	h		d	h		d	h	
Jan.	17	6.7	Jan.	13	11.9	Jan.	17	7.4	Jan.	15	5.6	Jan.	13	7.6	Jan.	8	23.1	Jan.	16	14.3	N.
	24	20.1		21	1.4		25	14.3		23	12.6		22	0.5		17	16.0		23	7.9	S.
Feb.	1	9.6		28	14.8	Feb.	2	21.2		31	19.5		30	17.5		26	9.0		30	1.5	N.
	8	23.0	Feb.	5	4.3		11	4.1	Feb.	9	2.4	Feb.	8	10.5	Feb.	4	2.0	Feb.	5	19.1	S.
	16	12.5		12	17.8		19	11.1		17	9.3		17	3.4		12	18.9		12	12.7	N.
	24	2.0		20	7.3		27	18.0		25	16.3		25	20.4		21	11.9		19	6.3	S.
Mar.	2	15.4		27	20.7	Mar.	7	0.9	Mar.	4	23.2	Mar.	5	13.4	Mar.	1	4.9		25	23.8	N.
	10	4.9	Mar.	6	10.2		15	7.8		13	6.1		14	6.3		9	21.8	Mar.	3	17.4	S.
	17	18.4		13	23.6		23	14.8		21	13.1		22	23.3		18	14.8		10	11.0	N.
	25	7.8		21	13.1		31	21.7		29	20.0		31	16.3		27	7.8		17	4.6	S.
Apr.	1	21.3		29	2.6	Apr.	9	4.6	Apr.	7	2.9	Apr.	9	9.3	Apr.	5	0.8		23	22.2	N.
	9	10.8	Apr.	5	16.1		17	11.6		15	9.8		18	2.2		13	17.7		30	15.8	S.
	17	0.3		13	5.5		25	18.5		23	16.8		26	19.2		22	10.7	Apr.	6	9.4	N.
	24	13.7		20	19.0	May	4	1.4	May	1	23.7	May	5	12.2	May	1	3.7		13	3.0	S.
May	2	3.2		28	8.5		12	8.3		10	6.6		14	5.1		9	20.6		19	20.6	N.
	9	16.6	May	5	21.9		20	15.3		18	13.5		22	22.1		18	13.6		26	14.2	S.
	17	6.1		13	11.4		28	22.2		26	20.5		31	15.1		27	6.6	May	3	7.8	N.
	24	19.6		21	0.9	June	6	5.1	June	4	3.4	June	9	8.0	June	4	23.5		10	1.4	S.
June	1	9.1		28	14.3		14	12.1		12	10.3		18	1.0		13	16.5		16	19.0	N.
	8	22.5	June	5	3.8		22	19.0		20	17.3		26	18.0		22	9.5		23	12.6	S.
	16	12.0		12	17.3	July	1	1.9		29	0.2	July	5	11.0	July	1	2.5		30	6.2	N.
	24	1.5		20	6.7		9	8.8	July	7	7.1		14	3.9		9	19.4	June	5	23.8	S.
July	1	14.9		27	20.2		17	15.8		15	14.0		22	20.9		18	12.4		12	17.4	N.
	9	4.4	July	5	9.7		25	22.7		23	21.0		31	13.9		27	5.4		19	11.0	S.
	16	17.8		12	23.1	Aug.	3	5.6	Aug.	1	3.9	Aug.	9	6.8	Aug.	4	22.3		26	4.5	N.

	d	h		d	h
Period of Ariel,	2	12.489	Period of Titania,	8	16.942
Period of Umbriel,	4	3.460	Period of Oberon,	13	11.119

NOTE.—For Ariel only every third elongation is given, and for Umbriel every alternate one. The intermediate ones may be found by adding multiples of the period of the satellite.



Date.	Position Angle.	Apparent Distance.
	°	″
Jan. 10,	241.8	16.8
Sept. 1,	246.3	16.4
Dec. 27,	244.3	16.9

APPARENT ORBIT OF THE SATELLITE OF NEPTUNE IN 1892, AS SEEN IN AN INVERTING TELESCOPE.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

North East.			South West.			North East.			South West.			North East.			South West.		
	d	h		d	h		d	h		d	h		d	h		d	h
Jan.	1	7.1	Jan.	4	5.7	Sept.	5	1.6	Sept.	1	3.0	Nov.	8	17.5	Nov.	4	19.0
	7	4.2		10	2.8		10	22.7		7	0.1		14	14.6		10	16.1
	13	1.3		15	23.9		16	19.7		12	21.2		20	11.7		16	13.1
	18	22.3		21	21.0		22	16.8		18	18.3		26	8.8		22	10.2
	24	19.4		27	18.1		28	13.9		24	15.4	Dec.	2	5.8		28	7.3
	30	16.5	Feb.	2	15.2	Oct.	4	11.0		30	12.5		8	2.9	Dec.	4	4.4
Feb.	5	13.6		8	12.3		10	8.1	Oct.	6	9.6		14	0.0		10	1.5
	11	10.7		14	9.4		16	5.2		12	6.6		19	21.1		15	22.6
	17	7.8		20	6.5		22	2.3		18	3.7		25	18.2		21	19.7
	23	4.9		26	3.5		27	23.3		24	0.8		31	15.3		27	16.7
	29	2.0	Mar.	3	0.6	Nov.	2	20.4		29	21.9				Jan.	2	13.8

The above times are those of each passage of the satellite through an apsis of its apparent orbit. The position of the satellite at any other time may be found by measuring around the orbit from the apsis last passed through, remembering that the radius vector of the satellite describes equal areas in equal times.

Period of the satellite of Neptune, $5^d\,21^h.045$.

NOTE.—In the above diagrams the central circle represents the planet, and is on the same scale as the orbits.

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m			°	′
Jan.	1	9	24	☌ ♀ ☽	.... ♀ +	3	17
	2	4	32	⊕	in Perihelion.		
	2	21	16	♀	Greatest Hel. Lat. S.		
	3	23	0	☌ ♃ ☽	.... ♃ +	4	2
	4	2	33	☿	Greatest Hel. Lat. N.		
	7	21	16	☿	Stationary.		
	9	23	33	☌ ♆ ☽	.... ♆ —	2	43
	10	0	16	♄	Stationary.		
	18	17	0	☌ ♄ ☽	.... ♄ —	1	57
	19	2	50	☿	Greatest elong. W.	24	16
	21	18	30	☌ ♅ ☽	.... ♅ —	1	8
	23	19	7	☌ ♂ ☽	.... ♂ +	1	15
	25	18	–	□ ♅ ☉			
	27	4	17	☌ ☿ ☽	.... ☿ +	3	59
	27	14	4	☿	in ☊		
	31	6	26	☌ ♀ ☽	.... ♀ +	3	42
	31	15	28	☌ ♃ ☽	.... ♃ +	3	42
Feb.	5	17	0	☌ ♀ ♃	.... ♀ —	0	1
	6	4	38	☌ ♆ ☽	.... ♆ —	2	54
	6	18	52	☿	in Aphelion.		
	8	22	0	♅	Stationary.		
	14	22	46	☌ ♄ ☽	.... ♄ —	1	40
	15	8	0	♆	Stationary.		
	18	2	44	☌ ♅ ☽	.... ♅ —	0	49
	21	14	13	☌ ♂ ☽	.... ♂ +	2	39
	26	21	28	☌ ☿ ☽	.... ☿ +	3	3
	27	4	15	☿	Greatest Hel. Lat. S.		
	28	3	34	♀	in ☊		
	28	11	32	☌ ♃ ☽	.... ♃ +	3	19
Mar.	1	2	33	☌ ♀ ☽	.... ♀ +	2	54
	4	10	43	☌ ♆ ☽	.... ♆ —	3	11
	5	13	10	☌ ☿ ☉	Superior.		
	10	0	1	♂	in ☊		
	12	3	45	☌ ☿ ♃	.... ☿ +	0	14
	13	1	40	☌ ♄ ☽	.... ♄ —	1	38
	16	4	22	☍ ♄ ☉			
	16	8	45	☌ ♅ ☽	.... ♅ —	0	35
	17	4	28	☿	in ☋		
	19	10	14	☉	enters ♈, Spring com.		
	20	10	55	☌ ♃ ☉			
	21	6	11	☌ ♂ ☽	.... ♂ +	3	32
	21	18	50	☿	in Perihelion.		
	27	9	28	☌ ♃ ☽	.... ♃ +	2	52
	28	20	20	□ ♂ ☉			
	29	1	3	☌ ☿ ☽	.... ☿ +	4	25
	30	19	0	☿	Greatest elong. E.	19	3
	30	21	22	☌ ♀ ☽	.... ♀ +	1	27
	31	19	18	☌ ♆ ☽	.... ♆ —	3	23
Apr.	1	1	49	☿	Greatest Hel. Lat. N.		
	1	14	52	♀	in Perihelion.		
	8	17	34	☿	Stationary.		
Apr.	9	3	28	☌ ♄ ☽	.... ♄ —	1	49
	12	0	12	☌ ♀ ♆	.... ♀ +	4	18
	12	12	36	☌ ♅ ☽	.... ♅ —	0	40
	18	18	17	☌ ♂ ☽	.... ♂ +	3	44
	18	22	53	☌ ☿ ☉	Inferior.		
	23	1	41	☍ ♅ ☉			
	23	16	27	♀	Greatest Hel. Lat. N.		
	24	7	9	☌ ♃ ☽	.... ♃ +	2	23
	24	13	7	☿	in ☊		
	25	9	53	☌ ☿ ☽	.... ☿ +	1	52
	26	–	–	☉	eclipsed, invis. at Wash.		
	28	6	36	☌ ♆ ☽	.... ♆ —	3	30
	29	11	52	☌ ♀ ☽	.... ♀ +	0	3
	29	12	7	♀	Greatest elong. E.	45	34
May	1	6	23	☿	Stationary.		
	4	18	0	☿	in Aphelion.		
	6	6	39	☌ ♄ ☽	.... ♄ —	2	2
	9	16	24	☌ ♅ ☽	.... ♅ —	0	49
	11	–	–	☽	eclipsed, visible at Wash.		
	16	15	–	☿	Greatest elong. W.	25	39
	17	1	29	☌ ♂ ☽	.... ♂ +	3	5
	22	2	37	☌ ♃ ☽	.... ♃ +	1	48
	23	20	28	☌ ☿ ☽	.... ☿ —	2	42
	25	3	30	☿	Greatest Hel. Lat. S.		
	25	16	19	♄	Stationary.		
	25	18	50	☌ ♆ ☽	.... ♆ —	3	34
	28	14	12	☌ ♀ ☽	.... ♀ —	1	53
	29	1	–	☌ ♆ ☉			
June	2	0	–	♀	Greatest brilliancy.		
	2	13	7	☌ ♄ ☽	.... ♄ —	2	5
	5	21	14	☌ ♅ ☽	.... ♅ —	0	53
	10	11	42	☌ ☿ ♆	.... ☿ +	1	2
	13	3	36	☿	in ☊		
	13	15	–	□ ♄ ☉			
	14	1	7	☌ ♂ ☽	.... ♂ +	1	25
	16	15	12	♀	Stationary.		
	17	18	–	☿	in Perihelion.		
	18	17	11	♀	in ☋		
	18	18	32	☌ ♃ ☽	.... ♃ +	1	9
	19	7	–	♃	Greatest Hel. Lat. S.		
	19	23	36	☌ ☿ ☉	Superior.		
	20	6	16	☉	enters ♋, Summer com.		
	22	6	3	☌ ♆ ☽	.... ♆ —	3	40
	24	6	6	☌ ☿ ☽	..... ☿ —	2	31
	25	7	57	☌ ♀ ☽	.... ♀ —	6	16
	28	1	–	☿	Greatest Hel. Lat. N.		
	29	23	11	☌ ♄ ☽	.... ♄ —	1	56
	30	14	42	☌ ☿ ♀	.... ☿ +	4	36
	30	15	–	⊕	in Aphelion.		
July	3	3	55	☌ ♅ ☽	.... ♅ —	0	47
	6	7	–	♂	Stationary.		

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m		°	′
July	9	1	16	☌ ♀ ☉ Inferior.		
	9	10	-	♅ Stationary.		
	11	12	20	☌ ♂ ☽ . . . . ♂ —	0	45
	15	0	-	□ ♃ ☉		
	16	6	18	☌ ♃ ☽ . . . . ♃ +	0	29
	19	15	2	☌ ♆ ☽ . . . . ♆ —	3	51
	21	12	28	☿ in ☋		
	21	17	29	☌ ♀ ☽ . . . . ♀ —	10	27
	23	0	37	♀ in Aphelion.		
	24	0	-	□ ♅ ☉		
	24	7	-	♃ in Perihelion.		
	25	7	10	☌ ☿ ☽ . . . . ☿ —	5	53
	27	11	53	☌ ♄ ☽ . . . . ♄ —	1	39
	28	15	-	☿ Greatest elong. E.	27	14
	30	12	25	☌ ♅ ☽ . . . . ♅ —	0	31
	30	16	43	♀ Stationary.		
	31	18	-	☿ in Aphelion.		
Aug.	3	13	13	☍ ♂ ☉		
	7	10	56	☌ ♂ ☽ . . . . ♂ —	1	52
	10	20	43	☿ Stationary.		
	12	14	18	☌ ♃ ☽ . . . . ♃ —	0	2
	13	19	52	♂ Greatest Hel. Lat. S.		
	13	20	4	♃ Stationary.		
	14	13	47	♀ Greatest Hel. Lat. S.		
	14	22	-	♀ Greatest brilliancy.		
	15	21	49	☌ ♆ ☽ . . . . ♆ —	4	8
	18	7	1	☌ ♀ ☽ . . . . ♀ —	9	45
	21	2	41	☿ Greatest Hel. Lat. S.		
	21	23	32	☌ ☿ ☽ . . . . ☿ —	9	56
	24	1	47	☌ ♄ ☽ . . . . ♄ —	1	19
	25	10	-	☌ ☿ ☉ Inferior.		
	26	22	3	☌ ♅ ☽ . . . . ♅ —	0	11
Sept.	2	17	-	□ ♆ ☉		
	3	4	45	☿ Stationary.		
	3	12	42	☌ ♂ ☽ . . . . ♂ —	0	44
	4	7	-	♂ Stationary.		
	7	3	45	♂ in Perihelion.		
	8	19	49	☌ ♃ ☽ . . . . ♃ —	0	15
	9	2	54	☿ in ☊		
	10	20	-	☿ Greatest elong. W.	17	55
	12	3	46	☌ ♆ ☽ . . . . ♆ —	4	24
	13	3	32	♆ Stationary.		
	13	17	-	☿ in Perihelion.		
	16	4	48	☌ ♀ ☽ . . . . ♀ —	7	36
	18	13	-	♀ Greatest elong. W.	46	5
	18	22	34	☌ ☿ ☽ . . . . ☿ —	2	54
	20	15	40	☌ ♄ ☽ . . . . ♄ —	1	1
	21	20	51	☉ enters ♎, Autumn com.		
	23	8	2	☌ ♅ ☽ . . . . ♅ +	0	5
	24	0	19	☿ Greatest Hel. Lat. N.		
	25	5	17	☌ ♄ ☉		
Oct.	1	4	27	☌ ☿ ♄ . . . . ☿ —	0	34
	1	6	22	☌ ♂ ☽ . . . . ♂ +	1	21
	6	0	37	☌ ♃ ☽ . . . . ♃ —	0	3
	7	11	58	☌ ☿ ☉ Superior.		
	9	10	46	☌ ♆ ☽ . . . . ♆ —	4	33
	9	20	33	♀ in ☊		
	12	1	6	☍ ♃ ☉		
	15	22	0	☌ ♀ ☽ . . . . ♀ —	4	27
	17	16	55	☿ in ☋		
	18	4	50	☌ ♄ ☽ . . . . ♄ —	0	42
	20	-	-	☉ eclipsed; vis. at Wash.		
	20	1	21	☌ ☿ ♅ . . . . ☿ —	0	46
	20	17	54	☌ ♅ ☽ . . . . ♅ +	0	17
	20	20	21	☌ ☿ ☽ . . . . ☿ —	0	29
	24	18	-	☌ ♂ δ Capricorni . ♂ +	0	1
	27	17	-	☿ in Aphelion.		
	28	16	-	☌ ♅ ☉		
	29	12	11	☌ ♂ ☽ . . . . ♂ +	2	57
Nov.	2	6	4	☌ ♃ ☽ . . . . ♃ +	0	21
	3-4	-	-	☽ eclipsed, invis. at Wash.		
	5	19	48	☌ ♆ ☽ . . . . ♆ —	4	33
	10	2	45	☌ ☿ ♄ . . . . ☿ —	0	31
	12	14	4	♀ in Perihelion.		
	14	7	8	☌ ♄ ☽ . . . . ♄ —	0	23
	15	4	59	☌ ♀ ☽ . . . . ♀ —	0	14
	17	2	5	☿ Greatest Hel. Lat. S.		
	17	3	55	☌ ♅ ☽ . . . . ♅ +	0	27
	20	19	59	☌ ☿ ☽ . . . . ☿ +	1	6
	22	16	-	☿ Greatest elong. E.	21	52
	27	0	2	☌ ♂ ☽ . . . . ♂ +	3	34
	29	12	41	☌ ♃ ☽ . . . . ♃ +	0	38
	30	20	44	☍ ♆ ☉		
Dec.	1	19	24	☿ Stationary.		
	3	6	2	☌ ♆ ☽ . . . . ♆ —	4	29
	4	7	41	☌ ♀ ♅ . . . . ♀ +	1	37
	4	8	-	♀ Greatest Hel. Lat. N.		
	6	2	11	☿ in ☊		
	9	6	14	□ ♂ ☉		
	9	13	21	♃ Stationary.		
	10	17	-	☿ in Perihelion.		
	11	11	40	☌ ☿ ☉ Inferior.		
	12	4	40	☌ ♄ ☽ . . . . ♄ +	0	4
	14	13	18	☌ ♅ ☽ . . . . ♅ +	0	41
	15	16	57	☌ ♀ ☽ . . . . ♀ +	3	18
	17	12	37	☌ ☿ ☽ . . . . ☿ +	6	5
	20	15	11	☉ enters ♑, Winter com.		
	20	23	40	☿ Greatest Hel. Lat. N.		
	21	13	49	☿ Stationary.		
	25	14	17	☌ ♂ ☽ . . . . ♂ +	3	7
	26	20	58	☌ ♃ ☽ . . . . ♃ +	0	32
	30	15	24	☌ ♆ ☽ . . . . ♆ —	4	28
	31	15	-	☿ Greatest elong. W.	22	47

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude	
				From Washington.	From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Åbo	+ 60 26 56.8	− 9 53.5	9.998902	− 6 37 18.45	− 1 29 6.41
Adelaide	− 34 55 33.8	+ 10 47.6	9.999527	−14 22 32.34	− 9 14 20.30
Albany	+ 42 39 49.5	− 11 28.2	9.999336	− 0 13 12.87	+ 4 54 59.17
Alfred (N. Y.)	+ 42 15 19.8	− 11 27.2	9.999346	+ 0 2 55.00	+ 5 11 7.04
Algier	+ 36 45 2.7	− 11 1.6	9.999483	− 5 20 23.43	− 0 12 11.39
Allegheny	+ 40 27 41.6	− 11 21.6	9.999391	+ 0 11 50.89	+ 5 20 2.93
Altona	+ 53 32 45.3	− 11 0.8	9.999063	− 5 47 58.39	− 0 39 46.35
Amherst	+ 42 22 17.1	− 11 27.5	9.999343	− 0 18 7.37	+ 4 50 4.67
Annapolis	+ 38 58 53.5	− 11 15.0	9.999428	− 0 2 15.60	+ 5 5 56.44
Ann Arbor	+ 42 16 48.0	− 11 27.3	9.999346	+ 0 26 43.10	+ 5 34 55.14
Arcetri	+ 43 45 14.4	− 11 29.9	9.999308	− 5 53 15.15	− 0 45 3.11
Armagh	+ 54 21 12.7	− 10 54.9	9.999043	− 4 41 36.54	+ 0 26 35.5
Athens	+ 37 58 20.0	− 11 9.4	9.999453	− 6 43 7.74	− 1 34 55.7
Beloit	+ 42 30 9.0	− 11 27.8	9.999340	+ 0 47 55.26	+ 5 56 7.30
Berlin	+ 52 30 16.7	− 11 7.7	9.999088	− 6 1 46.95	− 0 53 34.91
Berne	+ 46 57 8.7	− 11 29.2	9.999227	− 5 37 58.04	− 0 29 46.0
Besançon	+ 47 14 59.0	− 11 28.7	9.999219	− 5 32 9.24	− 0 23 57.20
Bethlehem	+ 40 36 23.9	− 11 22.2	9.999388	− 0 6 40.19	+ 5 1 31.85
Birr Castle	+ 53 5 47.0	− 11 3.9	9.999074	− 4 36 31.14	+ 0 31 40.9
Bologna	+ 44 29 47.0	− 11 30.5	9.999289	− 5 53 36.64	− 0 45 24.6
Bonn	+ 50 43 45.0	− 11 17.3	9.999132	− 5 36 35.33	− 0 28 23.29
Bordeaux	+ 44 50 16.7	− 11 30.7	9.999281	− 5 6 6.60	+ 0 2 5.44
Bothkamp	+ 54 12 9.6	− 10 56.0	9.999047	− 5 48 42.84	− 0 40 30.8
Breslau	+ 51 6 56.5	− 11 15.4	9.999122	− 6 16 20.75	− 1 8 8.71
Brussels	+ 50 51 10.5	− 11 16.8	9.999129	− 5 25 40.64	− 0 17 28.6
Cambridge (*England*)	+ 52 12 51.6	− 11 9.4	9.999095	− 5 8 34.79	− 0 0 22.75
Cambridge (*Mass.*)	+ 42 22 47.6	− 11 27.6	9.999343	− 0 23 41.05	+ 4 44 30.99
Cape of Good Hope	− 33 56 3.4	+ 10 39.0	9.999550	− 6 22 6.78	− 1 13 54.74
Chapultepec	+ 19 25 17.5	− 7 12.0	9.999841	+ 1 28 26.20	+ 6 36 38.24
Charkow	+ 50 0 10.2	− 11 20.5	9.999150	− 7 33 6.74	− 2 24 54.7
Chicago	+ 41 50 1.0	− 11 26.2	9.999357	+ 0 42 14.69	+ 5 50 26.73
Christiania	+ 59 54 43.7	− 10 0.2	9.998914	− 5 51 5.89	− 0 42 53.85
Cincinnati (*New Obs.*)	+ 39 8 19.5	− 11 15.8	9.999424	+ 0 29 29.25	+ 5 37 41.29
Cincinnati (*Old Obs.*)	+ 39 6 26.5	− 11 15.6	9.999425	+ 0 29 47.01	+ 5 37 59.05
Clinton	+ 43 3 17.0	− 11 28.9	9.999326	− 0 6 34.65	+ 5 1 37.39
Coimbra	+ 40 12 25.8	− 11 20.6	9.999398	− 4 34 37.54	+ 0 33 34.5
Copenhagen	+ 55 41 13.6	− 10 43.9	9.999011	− 5 58 30.96	− 0 50 18.92
Cordoba	− 31 25 15.5	+ 10 13.5	9.999608	− 0 51 23.84	+ 4 16 48.2
Cracow	+ 50 3 50.0	− 11 20.3	9.999149	− 6 28 2.41	− 1 19 50.37
Dantzig	+ 54 21 18.0	− 10 54.9	9.999043	− 6 22 51.34	− 1 14 39.3
Dorpat	+ 58 22 47.4	− 10 17.6	9.998948	− 6 55 5.54	− 1 46 53.5
Dresden	+ 51 2 16.8	− 11 15.8	9.999124	− 6 3 6.88	− 0 54 54.84
Dublin	+ 53 23 13	− 11 1.9	9.999066	− 4 42 50.04	+ 0 25 22
Düsseldorf	+ 51 12 25	− 11 15.0	9.999120	− 5 35 17.04	− 0 27 5
Dun Echt	+ 57 9 36	− 10 30.2	9.998977	− 4 58 32.04	+ 0 9 40.0
Durham	+ 54 46 6.2	− 10 51.6	9.999033	− 5 1 52.24	+ 0 6 19.8
Edinburgh	+ 55 57 23.2	− 10 41.5	9.999005	− 4 55 28.99	+ 0 12 43.05

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude.	
				From Washington.	From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Florence	+ 43 46 4.1	− 11 29.9	9.999308	− 5 53 13.54	− 0 45 1.5
Geneva	+ 46 11 58.8	− 11 30.1	9.999246	− 5 32 48.81	− 0 24 36.77
Georgetown	+ 38 54 26.2	− 11 14.6	9.999430	+ 0 0 6.20	+ 5 8 18.24
Glasgow (*Missouri*)	+ 39 13 45.6	− 11 16.2	9.999422	+ 1 3 5.93	+ 6 11 17.97
Glasgow (*Scotland*)	+ 55 52 42.8	− 10 42.2	9.999006	− 4 51 1.44	+ 0 17 10.6
Göttingen	+ 51 31 47.9	− 11 13.3	9.999112	− 5 47 58.28	− 0 39 46.24
Gotha	+ 50 56 37.5	− 11 16.3	9.999127	− 5 51 2.57	− 0 42 50.53
Greenwich	+ 51 28 38.4	− 11 13.6	9.999113	− 5 8 12.04	0 0 0
Hamburg	+ 53 33 7.0	− 11 0.8	9.999062	− 5 48 5.74	− 0 39 53.7
Hanover	+ 43 42 15	− 11 29.8	9.999309	− 0 19 4.13	+ 4 49 7.91
Hastings-on-Hudson	+ 40 59 25	− 11 23.6	9.999378	− 0 12 42.4	+ 4 55 29.64
Haverford	+ 40 0 40.1	− 11 19.8	9.999402	− 0 6 59.34	+ 5 1 12.70
Helsingfors	+ 60 9 43.3	− 9 57.1	9.998909	− 6 48 1.20	− 1 39 49.16
Hong Kong	+ 22 18 12.2	− 8 3.8	9.999792	−12 44 53.94	− 7 36 41.9
Hudson	+ 41 14 42.6	− 11 24.4	9.999371	+ 0 17 32.12	+ 5 25 44.16
Ipswich	+ 52 0 33.0	− 11 11.0	9.999100	− 5 13 7.84	− 0 4 55.80
Karlsruhe	+ 49 0 29.6	− 11 24.2	9.999175	− 5 41 48.55	− 0 33 36.51
Kasan	+ 55 47 24.2	− 10 43.0	9.999009	− 8 24 40.94	− 3 16 28.9
Kew	+ 51 28 6	− 11 13.6	9.999114	− 5 6 56.94	+ 0 1 15.1
Kiel	+ 54 20 29.7	− 10 55.0	9.999043	− 5 48 47.80	− 0 40 35.76
Kiew	+ 50 27 11.1	− 11 18.6	9.999139	− 7 10 12.68	− 2 2 0.64
Königsberg	+ 54 42 50.6	− 10 52.0	9.999034	− 6 30 10.95	− 1 21 58.91
Kremsmünster	+ 48 3 23.7	− 11 27.0	9.999199	− 6 4 44.24	− 0 56 32.2
Leiden	+ 52 9 20.0	− 11 9.8	9.999097	− 5 26 8.39	− 0 17 56.35
Leipzig	+ 51 20 6.3	− 11 14.3	9.999117	− 5 57 46.06	− 0 49 34.02
Leyton	+ 51 34 34	− 11 13.0	9.999111	− 5 8 11.17	+ 0 0 0.87
Lisbon (*Marine Obs.*)	+ 38 42 17.6	− 11 13.5	9.999435	− 4 31 47.04	+ 0 36 25.0
Lisbon (*Royal Obs.*)	+ 38 42 31.3	− 11 13.6	9.999435	− 4 31 27.36	+ 0 36 44.68
Liverpool	+ 53 24 4	− 11 1.8	9.999066	− 4 55 54.84	+ 0 12 17.2
Lübec	+ 53 51 31.2	− 10 58.6	9.999055	− 5 50 57.59	− 0 42 45.55
Lund	+ 55 41 52.1	− 10 43.8	9.999011	− 6 0 57.07	− 0 52 45.03
Lyons	+ 45 41 40.0	− 11 30.5	9.999259	− 5 27 19.90	− 0 19 7.86
Madison	+ 43 4 37.0	− 11 28.9	9.999325	+ 0 49 25.79	+ 5 57 37.83
Madras	+ 13 4 8.1	− 5 3.3	9.999926	−10 29 11.46	− 5 20 59.42
Madrid	+ 40 24 30.0	− 11 21.4	9.999393	− 4 53 26.64	+ 0 14 45.4
Manheim	+ 49 29 11.0	− 11 22.5	9.999163	− 5 42 2.56	− 0 33 50.52
Marburg	+ 50 48 46.9	− 11 16.9	9.999130	− 5 43 17.04	− 0 35 5.0
Markree	+ 54 10 31.8	− 10 56.2	9.999047	− 4 34 23.64	+ 0 33 48.4
Marseilles	+ 43 18 19.1	− 11 29.3	9.999320	− 5 29 46.68	− 0 21 34.64
Melbourne	− 37 49 53.3	+ 11 8.6	9.999456	−14 48 6.18	− 9 39 54.14
Mexico	+ 19 26 1.3	− 7 12.2	9.999840	+ 1 28 14.63	+ 6 36 26.67
Milan	+ 45 27 59.2	− 11 30.6	9.999265	− 5 44 58.01	− 0 36 45.97
Modena	+ 44 38 52.8	− 11 30.6	9.999285	− 5 51 54.84	− 0 43 42.8
Montsouris	+ 48 49 18.0	− 11 24.8	9.999180	− 5 17 32.72	− 0 9 20.68
Moscow	+ 55 45 19.8	− 10 43.3	9.999009	− 7 38 28.94	− 2 30 16.9
Mount Hamilton	+ 37 20 23.5	− 11 5.5	9.999468	+ 2 58 22.05	+ 8 6 34.09
Munich	+ 48 8 45.5	− 11 26.7	9.999197	− 5 54 38.17	− 0 46 26.13

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude From Washington.	Longitude From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Naples . . .	+ 40 51 45.4	− 11 23.1	9.999381	− 6 5 12.94	− 0 57 0.9
Nashville . .	+ 36 8 58.2	− 10 57.3	9.999497	+ 0 38 55.93	+ 5 47 7.97
Natal . . .	− 29 50 47 0	+ 9 55.2	9.999642	− 7 10 13.20	− 2 2 1.16
Neuchatel . .	+ 46 59 51.0	− 11 29.1	9.999226	− 5 36 2.24	− 0 27 50.2
New Haven . .	+ 41 18 36.5	− 11 24.6	9.999370	− 0 16 29.90	+ 4 51 42.14
New York (*Columb. Coll.*)	+ 40 45 23.1	− 11 22.7	9.999384	− 0 12 18.40	+ 4 55 53.64
New York (RUTHERFURD)	+ 40 43 48.5	− 11 22.6	9.999384	− 0 12 15.00	+ 4 55 57.04
Nice . . .	+ 43 43 16.7	− 11 29.8	9.999309	− 5 37 24.24	− 0 29 12.20
Nicolaeff . . .	+ 46 58 20.6	− 11 29.2	9.999226	− 7 16 6.14	− 2 7 54.1
Odessa . . .	+ 46 28 36	− 11 29.8	9.999239	− 7 11 14.34	− 2 3 2.3
Ogden . . .	+ 41 13 8.6	− 11 34.3	9.999372	+ 2 19 47.52	+ 7 27 59.56
O-Gyalla . . .	+ 47 52 43.4	− 11 27.4	9.999204	− 6 20 57.63	− 1 12 45.59
Olmütz . . .	+ 49 35 43	− 11 22.1	9.999160	− 6 17 14.64	− 1 9 2.6
Oxford (*Mississippi*)	+ 34 22 12.6	− 10 42.9	9.999540	+ 0 49 55.05	+ 5 58 7.09
Oxford (*Radcliffe*) .	+ 51 45 36.0	− 11 12.0	9.999106	− 5 3 9.44	+ 0 5 2.6
Oxford (*University*)	+ 51 45 34.2	− 11 12.0	9.999106	− 5 3 11.64	+ 0 5 0.40
Padua . . .	+ 45 24 2.5	− 11 30.6	9.999266	− 5 55 41.17	− 0 47 29.13
Palermo . . .	+ 38 6 44	− 11 10.2	9.999449	− 6 1 37.04	− 0 53 25.0
Paramatta . .	− 33 48 49.8	+ 10 37.8	9.999553	−15 12 18.24	−10 4 6.2
Paris . . .	+ 48 50 11.8	− 11 24.8	9.999179	− 5 17 32.99	− 0 9 20.95
Philadelphia . .	+ 39 57 7.5	− 11 19.5	9.999404	− 0 7 33.58	+ 5 0 38.46
Plonsk . . .	+ 52 37 40.0	− 11 6.9	9.999085	− 6 29 44.05	− 1 21 32.01
Pola . . .	+ 44 51 49.0	− 11 30.6	9.999280	− 6 3 35.22	− 0 55 23.18
Portsmouth . .	+ 50 48 3.0	− 11 17.0	9.999130	− 5 3 48.14	+ 0 4 23.90
Potsdam . . .	+ 52 22 56	− 11 8.4	9.999091	− 6 0 29.04	− 0 52 17
Poughkeepsie . .	+ 41 41 18	− 11 25.8	9.999360	− 0 12 38.44	+ 4 55 33.6
Prague . . .	+ 50 5 18.8	− 11 20.2	9.999148	− 6 5 53.44	− 0 57 41.4
Princeton . .	+ 40 20 57.8	− 11 21.2	9.999394	− 0 9 34.54	+ 4 58 37.50
Pulkowa . . .	+ 59 46 18.7	− 10 1.8	9.998917	− 7 9 30.71	− 2 1 18.67
Quebec . . .	+ 46 48 17.3	− 11 29.4	9.999231	− 0 23 22.74	+ 4 44 49.3
Rio de Janeiro .	− 22 54 23.8	+ 8 14.0	9.999782	− 2 15 30.63	+ 2 52 41.41
Rochester . .	+ 43 9 16.8	− 11 29.0	9.999324	+ 0 2 9.74	+ 5 10 21.78
Rome (*Coll. Rom.*) .	+ 41 53 53.6	− 11 26.3	9.999355	− 5 58 6.74	− 0 49 54.70
San Fernando . .	+ 36 27 41.5	− 10 59.5	9.999490	− 4 43 22.44	+ 0 24 49.6
Santiago de Chile .	− 33 26 42.0	+ 10 34.4	9.999651	− 0 25 25.74	+ 4 42 46.30
Schwerin . .	+ 53 37 38.2	− 11 0.2	9.999061	− 5 53 52.74	− 0 45 40.7
Senftenberg . .	+ 50 5 10.1	− 11 20.2	9.999148	− 6 14 2.64	− 1 5 50.6
South Hadley . .	+ 42 15 18.2	− 11 27.3	9.999346	− 0 17 51.75	+ 4 50 20.29
Speier . . .	+ 49 18 55.4	− 11 23.2	9.999167	− 5 41 57.64	− 0 33 45.6
St. Louis . . .	+ 38 38 3.6	− 11 13.2	9.999437	+ 0 52 37.07	+ 6 0 49.11
St. Petersburg .	+ 59 56 29.7	− 9 59.8	9.998913	− 7 9 25.54	− 2 1 13.5
Stockholm . .	+ 59 20 33.0	− 10 6.9	9.998927	− 6 20 26.04	− 1 12 14.00
Stonyhurst . .	+ 53 50 40	− 10 58.7	9.999055	− 4 58 19.36	+ 0 9 52.68
Strassburg (*New Obs.*)	+ 48 34 59.7	− 11 25.5	9.999186	− 5 39 16.69	− 0 31 4.65
Strassburg (*Old Obs.*)	+ 48 34 53.8	− 11 25.5	9.999186	− 5 39 14.53	− 0 31 2.49
Sydney . . .	− 33 51 41.1	+ 10 38.3	9 999552	−15 13 1.58	−10 4 49.54
Taschkent . .	+ 41 19 32 2	− 11 24.7	9.999369	− 9 45 22.84	− 4 37 10.80

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude From Washington.	Longitude From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Toulouse . . .	+ 43 36 47	− 11 29.7	9.999312	− 5 14 3.14	− 0 5 51.1
Turin	+ 45 4 6.0	− 11 30.7	9.999275	− 5 39 0.44	− 0 30 48.4
Twickenham . .	+ 51 27 4.2	− 11 13.7	9.999114	− 5 6 58.94	+ 0 1 13.1
Univ. of Virginia .	+ 38 2 1.2	− 11 9.8	9.999448	+ 0 5 53.18	+ 5 14 5.22
Upsala . . .	+ 59 51 31.5	− 10 0.8	9.998915	− 6 18 42.23	− 1 10 30.19
Utrecht . . .	+ 52 5 10.5	− 11 10.2	9.999098	− 5 28 43.74	− 0 20 31.7
Venice . . .	+ 45 25 49.5	− 11 30.6	9.999266	− 5 57 37.44	− 0 49 25.4
Vienna (*Josephstadt*)	+ 48 12 53.8	− 11 26.6	9.999195	− 6 13 37.34	− 1 5 25.3
Vienna (*New Obs.*) .	+ 48 13 55.4	− 11 26.5	9.999195	− 6 13 33.26	− 1 5 21.22
Vienna (*Old Obs.*) .	+ 48 12 35.5	− 11 26.6	9.999195	− 6 13 43.78	− 1 5 31.74
Warsaw . . .	+ 52 13 5.7	− 11 9.4	9.999095	− 6 32 19.44	− 1 24 7.4
Washington . .	+ 38 53 38.8	− 11 14.5	9.999430	0 0 0	+ 5 8 12.04
West Point . .	+ 41 23 31	− 11 24.9	9.999368	− 0 12 22.71	+ 4 55 49.33
Wilhelmshaven .	+ 53 31 52.0	− 11 0.9	9.999063	− 5 40 47.25	− 0 32 35.21
Williamstown (*Mass.*)	+ 42 42 49	− 11 28.3	9.999334	− 0 15 18.6	+ 4 52 53.44
Williamstown (*Victoria*)	− 37 52 7.2	+ 11 8.8	9.999455	−14 47 50.84	− 9 39 38.8
Wilna . . .	+ 54 41 0.	− 0 52.3	9.999035	− 6 49 23.94	− 1 41 11.9
Windsor . . .	− 33 36 28.9	+ 10 35.9	9.999558	−15 11 32.81	−10 3 20.77
Zürich . . .	+ 47 22 40.0	− 11 28.5	9.999216	− 5 42 24.64	− 0 34 12.6

ON THE ARRANGEMENT AND USE OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC

PART I—THE EPHEMERIS FOR THE MERIDIAN OF GREENWICH.

THE greater portion of this Ephemeris, embracing the positions of the sun and moon; the distances of the moon from the centres of the sun and the four most conspicuous planets, and from certain fixed stars; the ephemerides of the planets Mercury, Venus, Mars, Jupiter, and Saturn, is designed for the special use of navigators. The remainder contains the ephemerides of Uranus and Neptune, the heliocentric co-ordinates of the seven major planets, the rectangular equatorial co-ordinates of the sun, the moon's longitude and latitude, data for the libration of the moon, the obliquity of the ecliptic, the equation of the equinoxes, etc.

TIME.

Astronomers make use of several different kinds of time: mean solar time; true, or apparent solar time; and sidereal time.

Solar Time.—Solar time is that used for all the purposes of ordinary life, and is measured by the daily motion of the sun. A *Solar Day* is the interval of time between two successive transits of the sun over the same meridian; and the hour-angle of the sun is called *Solar Time.* This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the same meridian are not exactly equal, owing to the varying motion of the earth around the sun, and to the obliquity of the ecliptic. The intervals between the sun's transits over the meridian being unequal it is impossible to regulate a clock or chronometer so that it shall accurately follow the sun.

To avoid the irregularity which would arise from using the true sun as the measure of time, a fictitious sun, called the *Mean Sun*, is supposed to move in the equator with a uniform velocity. This mean sun is supposed to keep, on the average, as near the real sun as is consistent with perfect uniformity of motion; it is sometimes in advance of it, and sometimes behind it, the greatest deviation being about 16 minutes of time.

Mean Solar Time, which is perfectly equable in its increase, is measured by the motion of this mean sun. The clocks in ordinary use and the chronometers used by navigators are regulated to mean solar time.

True, or *Apparent Solar Time* is measured by the motion of the real sun.

The difference between apparent and mean time is called the *Equation of Time.* By means of it, we change apparent to mean time, or the reverse. Thus, if the apparent time be given, the mean time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found, on page I of the Calendar for each month. If the mean time be given, the apparent time is obtained by applying the equation of time as directed by the precept on page II of the Calendar.

Sidereal Time.—Sidereal time is measured by the daily motion of the stars; or, as it is used by astronomers, by the daily motion of that point in the equator from which the true right ascension of the stars is counted. This point is the vernal epuinox, and its hour-angle is called *Sidereal Time*. Astronomical clocks, regulated to sidereal time, are called sidereal clocks.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over the meridian, and its next succeeding return to the same meridian. It is about 3^m 56^s shorter than the mean solar day; 365¼ solar days, or a year, being divided into 366¼ sidereal days. It is divided into 24 hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian. About March 21st of each year the sidereal clock agrees with the mean time, or ordinary clock, and the former gains on the latter about 3^m 56^s per day, so that at the end of a year it will have gained an entire day, and will again agree with the mean time clock.

Day.—The *Civil Day*, according to the customs of society, commences at midnight, and comprises twenty-four hours from one midnight to the next following. The hours are counted from 0 to 12 from midnight to noon, after which they are again reckoned from 0 to 12 from noon to midnight. Thus the day is divided into two periods of 12 hours each, of which the first is marked A. M., and the last is marked P. M.

The *Astronomical Day* commences at noon on the civil day of the same date. It also comprises twenty-four hours, but they are reckoned from 0 to 24, and from the noon of one day to that of the next following. The astronomical as well as the civil time may be either apparent or mean, according as it is reckoned from apparent noon or from mean noon.

The civil day begins twelve hours before the astronomical day; therefore the first period of the civil day answers to the last part of the preceding astronomical day, and the last period of the civil day corresponds to the first part of the same astronomical day. Thus, January 9th, 2 o'clock, A. M., civil time, is January 8th, 14^h, astronomical time; and January 9th, 2 o'clock, P. M., civil time, is also January 9th, 2^h, astronomical time. The rule, then, for the transformation of civil time into astronomical time is this:—*If the civil time is marked A. M., take one from the day and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.*

To change astronomical to civil time, we simply write P. M. after it, if it is less than 12 *hours. If greater than* 12 *hours, we subtract* 12 *hours from it, add* 1 *to the days, and write A. M.* For example, January 3d, 23 hours, astronomical time, is January 4th, 11 o'clock, A. M. civil time.

If the longitude from Greenwich be expressed in time, and, when *west*, *added* to the local time, or, when *east*, *subtracted* from the local time, the result is the corresponding Greenwich time. If the local mean time is used, the result is the Greenwich mean time, which ordinarily is that required for the use of this Ephemeris. The rule is the same, whether we use mean or sidereal time.

THE CALENDAR.

The Calendar is divided into twelve months, and to each month are assigned eighteen pages, the contents of which are as follow:—

Page I contains, for Greenwich apparent noon of each day, *The Sun's Apparent Right Ascension* and *Declination*, and the *Equation of Time*. Adjoining columns contain the differences of these quantities for one hour. By multiplying this difference by the hours and parts of an hour from Greenwich apparent noon, and adding the amount to, or subtracting it from, the quantity at noon, according as that quantity is increasing or decreasing, we obtain the value of any quantity for any given Greenwich apparent time. The hourly differences are given for the instant of apparent noon at Greenwich, and, when greater accuracy is required, should be first interpolated for half the hours and parts of an hour of the Greenwich apparent time.

This page is chiefly used when the sun is observed on the meridian, and the local apparent time is $0^h 0^m 0^s$. The longitude from Greenwich expressed in time, if west, is at that instant the Greenwich apparent time, or time after Greenwich apparent noon; if east, it is time before

Greenwich apparent noon. The longitude of any place is therefore employed in reducing the quantities on this page to apparent noon at the place.

The right ascension of the sun thus reduced is the sidereal time of local apparent noon. The difference between it and the clock time of the meridian passage of the sun is the error of the clock on sidereal time.

The declination of the sun reduced to the meridian, or apparent noon, of the place, is required in finding the latitude from a meridian altitude of the sun.

As an example of the use of page I:—

Let the sun's declination be required at apparent noon, 1892, May 31, at a place whose longitude is 179° 40′, or $11^h\ 58^m\ 40^s$ east from Greenwich:

		h	m	s
Local apparent time . . .	May 31,	0	0	0
Longitude from Greenwich (subtractive) . .		11	58	40
Greenwich apparent time . . .	May 30,	12	1	20

Reducing the minutes and seconds to decimals of an hour, we find that this moment is $12^h.022$ after Greenwich apparent noon on May 30, or $11^h.978$ before Greenwich apparent noon on May 31.

On page 74 of the Ephemeris we find that the change of declination in one hour is

	″
May 30, at Greenwich apparent noon . . .	21.61
May 31, at Greenwich apparent noon . . .	20.65
Difference for one day	0.96

If we want to be very exact, we find the amount of this hourly difference for the time which is half way between Greenwich noon and the time of observation; that is, for 6 hours after Greenwich noon of the 30th, this being half of 12 hours. Six hours is 0.25 of a day; so the calculation is as follows:—

	″
Difference for one hour, May 30	21.61
Change for 0.25 of a day or 0″.96 × 0.25 . . .	0.24
Difference at 6 hours after noon	21.85

$$21''.85 \times 12.022 = 262''.7 = 4'\ 22''.7$$

	°	′	″
Declination at Greenwich noon, May 30 . . .	N. 21	53	11.9
Change in 12.022 hours (additive)		4	22.7
Sun's declination at time of observation . . .	N. 21	57	34.6

When the time of observation is only a few hours before Greenwich noon, it may be better to count the longitude backward from this nearest noon. Thus, in the example just given, the time is $11^h.978$ before Greenwich noon of May 31; half this interval is about 0.25 of a day, and the hourly motion for the middle of the interval is 20″.42. Then, we find:—

	°	′	″
Declination at Greenwich noon, May 31 . . .	N. 22	1	39.3
Product of 20″.42 × 11.978 = 244″.6 (subtractive) .		4	4.6
Sun's declination at time of observation . . .	N. 21	57	34.7

It will always be well to make the calculation by both methods, as their agreement will show both to be right.

At sea it is ordinarily sufficient to have the declination to the nearest half minute, and the reduction may be found by Table V of Bowditch's *American Practical Navigator.*

The equation of time, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the apparent time, or the time given by an observation of the sun, to obtain the mean time. The heading of the column directs the manner in which the equation is to be applied. When there is a change in the course of the month from addition to subtraction or the reverse (as in the months of April and June), the two different directions are separated by a line, while a corresponding line below points out the dates between which the change takes place. The equation of time, as given on page I, is the mean time of apparent noon, or the hour-angle of the mean sun at that instant.

The Sun's Semidiameter and the *Sidereal Time of Semidiameter Passing Meridian* are also given on page I. The sun's semidiameter is used in reducing the altitude of the upper or lower limb of the sun to the altitude of the center; and in reducing the angular distance of the limb from the moon or some other object, to the distance from the center of the sun. The sidereal time of semidiameter passing the meridian is employed in obtaining the passage of the sun's center over the wires of a transit-instrument, when the passage of one limb only has been observed. The quantity found in this column is to be added to the time of transit of the first, or western, limb; and to be subtracted from the time of transit of the second, or eastern, limb.

Page II contains, for Greenwich mean noon of each day, *The Sun's Apparent Right Ascension*, and *Declination*, the *Equation of Time*, and the *Sidereal Time of Mean Noon*. The hourly changes of these quantities are also given, and may be used in reducing them to any Greenwich mean time. The hourly changes may be first interpolated for half the Greenwich time, when great precision is required, in the way described in explaining the calculation of the declination.

The right ascension and declination on pages I and II are affected by aberration, and therefore denote the *apparent* position of the *true* sun. Page II is more conveniently used when the mean time is known. This is the case in most observations of the sun out of the meridian, when the times have been noted by a clock or chronometer regulated to mean time. The quantities on this page can be reduced to mean noon of any place by interpolating for the longitude, as in the example of the sun's declination on the preceding page.

The sun's declination is required for finding the latitude of the place, the local time, and the sun's azimuth and amplitude, from observations of the sun.

The equation of time is needed in finding the mean time from observations of the sun, and the latitude from observations out of the meridian. The heading of the column directs the manner in which it is to be applied to mean time to obtain the apparent time.

The equation of time, as given on page II, is the apparent time of mean noon; and is equivalent to the hour-angle of the true sun at the instant of mean noon.

The sidereal time of mean noon is also the right ascension of the mean sun at Greenwich mean noon. It may be reduced for the longitude, or to any Greenwich mean time, by using the hourly difference, $9^s.8565$; or by Table III, appended to this volume, for reducing intervals of mean solar to sidereal time. Table LI of Bowditch's *Navigator* may be used for the same purpose when only the nearest quarter of a second is required.

The sun's right ascension and the sidereal time of mean noon, or right ascension of the mean sun, are useful in converting mean time to sidereal time. We first find the Greenwich mean time, then the R. A. of the mean sun for this time, as last explained: this being added to the local mean time will give the sidereal time.

The sidereal time of mean noon, reduced for the longitude of the place, is also used in converting sidereal time to mean time. Subtracting the reduced value from the given sidereal time, gives the interval of sidereal time from noon. Subtracting from this the corresponding reduction of a sidereal interval to a mean time interval, in Table II, appended to this volume, or Table LII of Bowditch's *Navigator*, will give the mean time required. This reduction may also be found by multiplying $9^s.8296$ by the hours and parts of an hour of the given sidereal time.

As examples of the use of page II: —

1.—Let the sun's right ascension and the equation of time be required for 1892, May 15, $9^h\ 2^m\ 30^s$, A. M., mean time, at a place whose longitude is 100° 10′, or $6^h\ 40^m\ 40^s$, west of Greenwich.

		h	m	s
Local astronomical mean time	May 14,	21	2	30
Longitude from Greenwich (additive)		6	40	40
Greenwich mean time	May 15,	3	43	10 = $3^h.7194$

Sun's Right Ascension.

	h	m	s
May 15, Greenwich noon .	3	30	52.13
H. D. $9^s.890 \times 3.7194$ . .	+ 0		36.78
	3	31	28.91

Equation of Time.

	m	s	
May 15, noon . .	3	49.63	(additive)
H. D. — $0^s.033 \times 3.72$	—	0.12	
	3	49.51	

In this case, the hourly differences interpolated to half the interval, or $1^h.9$ after noon, have been used.

The equation of time in this example is additive to mean time. Its reduction could also have been found by Table VI, A., of Bowditch's *Navigator*, but to seconds only.

2.—If the sidereal time is required for the same date and time, we have:—

	h	m	s
May 15, Sidereal Time (at Greenwich mean noon) . . .	3	34	41.76
Hourly difference $9^s.8565 \times 3.7194$	+	0	36.66
Add the local astronomical mean time	21	2	30.00
The required sidereal time is (rejecting 24^h)	0	37	48.42

The reduction $0^m\,36^s.66$ could have been found in Table III corresponding to the Greenwich mean time $3^h\,43^m\,10^s$. Also, by Table LI of Bowditch's *Navigator*, the reduction is $0^m\,36^s.7$.

3.—On 1892, May 15, A. M., at a place whose longitude is 100° 10′ W., suppose the sidereal time to be $0^h\,36^m\,37^s.16$, and that the corresponding mean time is required.

The astronomical day is May 14; the longitude in time, $+\,6^h\,40^m\,40^s$, or $+\,6^h.678$.

	h	m	s	
May 14, Sidereal Time (at Greenwich mean noon)	3	30	45.20	
The H. D. $9^s.8565 \times 6.678$, or the reduction for $6^h\,40^m\,40^s$ in Table III .	+	1	5.82	
The sidereal time of local mean noon	3	31	51.02	
The given sidereal time ($+\,24^h$, if necessary for the following subtraction) .	24	36	37.16	
Subtracting the first from the second gives the sidereal interval from noon .	21	4	46.14	$=21^h.0795$
$-\,9^s.8296 \times 21.0795$, or the reduction for $21^h\,4^m\,46^s.14$ in Table II . .	—	3	27.20	
The required astronomical mean time is . . . May 14,	21	1	18.94	

Page III contains, for Greenwich mean noon of each day, *The Sun's True Longitude* and *Latitude*, and the *Logarithm of the Radius Vector of the Earth.* The longitudes of the sun are the true longitudes, not corrected for aberration. The longitude is given in two columns, headed λ and λ'; λ representing the sun's longitude counted from the true equinox of the date; and λ'; the same co-ordinate counted from the mean equinox of the beginning of the year, (January $0^d.0$). A column of hourly differences enables the computer to obtain the sun's longitude for any hour from noon. The hourly differences of the logarithm of the radius vector are likewise given. The latitude is referred to the ecliptic of the date.

The last column on page III contains the *Mean Time of Sidereal Noon;* that is, the number of hours, minutes and seconds after Greenwich mean noon when the first point of Aries passes the meridian of Greenwich. It may be reduced to any meridian by interpolating for the longitude, or to any Greenwich sidereal time by means of the hourly difference, $-\,9^s.8296$. The reduction, however, can be taken directly from Table II for reducing intervals of sidereal time to mean solar time; or, approximately, from Table LII of Bowditch's *Navigator.*

This column may be used in converting sidereal time to mean time instead of that on page II. As an illustration, let us take Example 3, above.

It is seen in advance that the sum of the mean time of sidereal noon and the given sidereal time is less than 24 hours. Were it more than 24 hours, the mean time of sidereal noon should be taken out for May 13, that is the preceding astronomical day.

	h	m	s	
May 14, the mean time of Greenwich sidereal noon is . .	20	25	53.43	
The H. D. $-\,9^s.8296 \times 6.678$, or the reduction for long., Table II	—	1	5.64	
The mean time of local sidereal noon	20	24	47.79	
Add the given sidereal time	0	36	37.16	$=0^h.6103$
The sum is	21	1	24.95	
$-\,9^s.8296 \times 0.6103$, or the reduction for $0^h\,36^m\,37^s.2$ in Table II .	—	0	6.00	
The required astronomical mean time . May 14,	21	1	18.95	

Page IV contains *The Moon's Semidiameter* and Equatorial *Horizontal Parallax*, for each mean noon and midnight at Greenwich. Columns adjoining those of the horizontal parallax give the change of this quantity in one hour, by means of which it can be reduced to any other Greenwich mean time, in the same way as the sun's declination and the equation of time in the preceding examples. The sign plus or minus prefixed to the hourly differences, shows whether the horizontal parallax is increasing or decreasing.

The reduction of the moon's semidiameter may be readily found by multiplying the reduction of the horizontal parallax by 0.272. It may also be obtained from Table XI of BOWDITCH's *Navigator*, or by simply computing the proportional part.

If, for example, the semidiameter of the moon is to be taken out for 1892, June 11, 10^{h}, P. M., Greenwich mean time, we see that the difference of the semidiameters at noon and midnight of June 11 is 4″; then,

$$12^{h} : 10^{h} = 4'' : 3''.3,$$

which is the correction to be added to the semidiameter at noon, because the semidiameter is increasing. The moon's semidiameter then, for June 11, 10^{h}, is 15′ 14″.2 + 3″.3, or 15′ 17″.5.

The moon's semidiameter and horizontal parallax are required for all observations of the moon. When great precision is needed, the hourly differences should be first interpolated for half the interval of Greenwich time from noon or midnight, and a correction applied to the horizontal parallax for the latitude of the place of observation.

The *Mean Time of the Moon's Upper Transit at Greenwich*, which is given on page IV to tenths of a minute, is also accompanied with a column of differences for one hour of longitude, by means of which, having the longitude converted into time, the local time of the moon's meridian passage at any other place, may be computed. The reduction may be taken by simple inspection from BOWDITCH's Table XXVIII. The last column of this page contains the *Age* of the moon, or the time elapsed since the preceding new moon, to tenths of a day.

Pages V—XII contain *The Moon's Right Ascension*, and *Declination*, for each day and hour of Greenwich mean time. They are accompanied with columns of differences for one minute, which are also given at each hour. The Greenwich mean time, which is required for taking out these quantities, may be taken from a well-regulated chronometer, or obtained by applying the longitude converted into time, to the local mean time of the observer. The right ascension or declination is taken out for the day and hour of the Greenwich mean time; the *Diff. for* 1 *Minute* multiplied by the minutes and parts of a minute of the Greenwich time, and the product added to, or subtracted from the quantity, according as the quantity is increasing or decreasing.

Thus, suppose the moon's right ascension and declination are required for 1892, May 1, $10^{h}\,10^{m}\,30^{s}$, astronomical mean time at Greenwich:—

		Right Ascension.			*Declination.*
		h m s			° ′ ″
May 1, 10^{h}		7 26 28.03			N. 26 42 26.7
Diff. $2^{s}.4785 \times 10.5$	=	+ 26.02	$3''.492 \times 10.5$	=	− 36.7
May 1, $10^{h}\,10^{m}\,30^{s}$		7 26 54.05			N. 26 41 50.0

The differences interpolated for $5^{m}.2 = 0^{h}.09$ are, for the right ascension $2^{s}.478$, and for the declination 3″.504, which may be used for greater precision.

Page XII contains also the *Phases of the Moon* and the dates of the *Moon's Perigee and Apogee*, or least and greatest distances from the earth.

Pages XIII—XVIII contain the *Lunar Distances*, or the angular distances of the centre of the moon from the centre of the sun, and from the four larger planets and certain fixed stars, as they would appear to an observer at the centre of the earth. They are given for every third hour of Greenwich mean time, beginning at noon; the dates are therefore astronomical. All the distances that can be observed on the same day, are grouped together under that date; and the columns are read from left to right, across both pages of the same opening. The letter W. or E. is affixed to the name of the sun, planet or star, to indicate that it is on the west, or east side of the moon.

An observer on the earth's surface having measured a lunar distance, corrected it for errors of his instrument and for the semidiameter of the objects, and cleared it from the effects of refraction and parallax, finds the true or geocentric distance, that is, the distance as it would have appeared from the centre of the earth at the moment of observation. With this distance and the distances in the Ephemeris of the same bodies on the same day, the Greenwich mean time of the observation can be found.

To lessen the labor of computation, there is given in the Ephemeris, between every two successive distances, the logarithm of the seconds of time in which the distance changes 1″; or, as it is usually called, the *Proportional Logarithm of the Difference.* It is given for the middle instant of the two hours between which it is placed.

For computing the Greenwich time we have the following rule:—

Find in the Almanac the two distances between which the true distance falls; take out the nearer of these, the hours of Greenwich time over it, and the P. L. of Diff. between them.

Find the difference between the true distance and the distance taken from the Almanac; and from the proportional logarithm of this difference, as found in the Navigator, subtract the P. L. of Diff. taken from the Almanac.

The result is the proportional logarithm of an interval of time to be added to the hours of Greenwich time, taken from the Almanac, when the earlier Almanac-distance is used; to be subtracted from the hours of Greenwich time, when the later Almanac-distance is used.

Another method is, to add the common logarithm of the difference of the true and the Almanac-distances to the P. L. of Diff. of the Almanac; the sum will be the common logarithm of the correction to be applied to the hours of Greenwich time. The Table of *Logarithms of small Arcs in Space or Time,* given at the end of the volume for 1871, saves the operation of reducing degrees (or hours) and minutes to seconds, and the reverse.

As the P. L. of Diff. in the Ephemeris varies, the Greenwich time found by the methods just described may not be sufficiently exact. To correct it for such variation, or second difference, take the difference between the P. L. of Diff. used and the one which follows it in the Ephemeris, (or, more strictly, half the difference of the preceding and following ones). With this difference, and the first correction of the Greenwich time already found, enter Table I, appended to this volume, and take out the corresponding seconds, which are to be added to the approximate Greenwich time when the Prop. Logs. in the Ephemeris are decreasing; and subtracted when they are increasing.

Thus the Greenwich mean time of the observation can be obtained. If the observer has noted the time of observation by a chronometer, the difference of this chronometer-time and the Greenwich mean time will be the error of the chronometer on Greenwich time as found from the lunar distance. In this way lunar distances can be used as a check upon the chronometer. By a series of carefully observed lunar distances on both sides of the moon, the chronometer-error may generally be ascertained within 20 or 30 seconds.

If the observer has found the local mean time of observation from the observed altitude of one of the bodies, or by a watch regulated to that time by recent observations and corrected for change of longitude in the interval, the difference of this local time and the Greenwich time found from the lunar distance will be his longitude. A longitude derived by this method should always be considered as uncertain by 5′ or more.

As an example of finding the Greenwich mean time from a lunar distance, suppose that in 1892, Oct. 5, the corrected distance of the moon's centre from that of *a* Aquilæ is 69° 31′: —

Corrected distance	69° 31′ 0″		
Distance in Ephemeris Oct. 5, III^{h}	68 50 31	P. L.	0.3029
Difference	0 40 29	P. L.	0.6480
	h m s	P. L.	0.3451
Time from III^{h} (*after*)	+1 21 19		
Corr. for 2d Diff., Table I	+ 10		
Greenwich mean time Oct. 5	4 21 29		

By a table of common logarithms, or a table of logarithms of small arcs, the reduction of the Greenwich time would be found thus: —

From Ephemeris	**P. L.**	**0.3029**
Diff. of distances, $40' 29'' = 2429''$	**log**	**3.3854**
Red. of Greenwich time, $4879^s = 1^h 21^m 19^s$	**log**	**3.6883**

The result is the same as by the previous method.

Pages 218—249 contain the geocentric ephemerides of the seven major planets. The positions are referred to the equator and true equinox of the date, and corrected for aberration; they are, therefore, apparent positions. All the data except meridian passage are given for the moment of Greenwich mean noon. The column *Meridian Passage* gives the hour, minute and tenth of that passage of the planet over the meridian of Greenwich which occurs next after the noon of the date.

The right ascension and declination of a planet are required whenever it has been observed for time, latitude or azimuth. The mode of reducing them to any instant of Greenwich mean time is the same as in the examples for the sun, previously given. The local mean time of passage across any other meridian can be found by dividing the daily differences by 24, and multiplying the quotient by the hours and fractions of the longitude of the place. The product is subtractive from the time of Greenwich passage when the place is east of Greenwich, and additive when west. The corrections can never exceed one-half the change for one day.

Pages 250—263 contain the heliocentric positions of the seven major planets, and the logarithms of their distances from the earth. The heliocentric longitude is reckoned, not from the true equinox, as in the preceding ephemerides, but from the mean equinox of the date. It is, therefore, necessary to apply nutation, if the longitude from the true equinox is required. The daily motion is given for the moment of Greenwich mean noon. The column *Reduction to Orbit* gives the correction to be applied to the heliocentric longitudes in order to obtain the longitude counted along the orbit of the planet. This longitude is equal to the distance of the node from the mean equinox, plus the distance of the planet from the node. The heliocentric latitude is counted from the moving plane of the ecliptic. The *Logarithm of Radius Vector* is the logarithm of the distance of the centre of the planet from that of the sun, at each Greenwich mean noon given in the first column. The last two columns give, in the same way, the logarithm of the true distance of the centre of the planet from that of the earth. The one column gives the quantity for the Greenwich noon indicated on the left hand side of the page, and the other for the noon which is midway between that date and the date next below it. In the case of Mercury, this intermediate date is mean noon of the day immediately following; in the case of Venus, Mars, Jupiter, and Saturn, it is mean noon of the second day following; and in the case of Uranus and Neptune, mean noon of the fourth day following.

Pages 264—271 contain the rectangular co-ordinates of the centre of the sun, referred to the centre of the earth as the origin, and to the true equator and equinox of each date as the circle and point of reference. Each co-ordinate is given first for Greenwich mean noon, and in the column following for mean midnight of the same day. The columns *Reduc. to Mean Eq'x of Jan. 0* give the corrections to be applied to the co-ordinates for noon in order to obtain the corresponding co-ordinates referred to the mean equator and the mean equinox of January 0.

Pages 272—275 give the longitude and latitude of the moon for every Greenwich mean noon and midnight. Both quantities are referred to the true ecliptic and equinox of the date.

Pages 276 and 277 contain the position of the moon's equator and the mean longitude of the moon, and a table for computing the libration of the moon. The epochs of greatest libration of the moon, together with the formulæ for finding the libration in longitude and latitude are given on page 419.

Page 278 contains, for each tenth Greenwich mean noon, the values of the principal elements arising from the motion of the equinox, and also the aberration and parallax of the sun. The column *Apparent Obliquity of the Ecliptic* (HANSEN) gives the true inclination of the earth's equator to the ecliptic, without correction for the terms depending on the moon's longitude. The *Equation of Equinoxes* is really the astronomical nutation; that given *In Longitude* is the correction to be applied to the longitude of the body referred to the mean equinox, in order to obtain that longitude as referred to the true equinox. When the correction is positive, the true longitudes are greater than those referred to the mean equinox; while the contrary is true when the correction has the negative sign. The equation *In R. A.* is equal to that in longitude, multiplied by the cosine of the obliquity of the ecliptic.

The next column gives the *Precession of Equinoxes in Longitude*, from January 0 to each of the dates following. *The Sun's Aberration* is the quantity which is to be applied to the true longitude of the sun in order to obtain its apparent longitude. The correction being negative shows that the apparent longitude as affected by aberration is always less than the true longitude. The *Sun's Equatorial Horizontal Parallax*, given in the next column, is the angle subtended by the radius of the earth's equator, as seen from the centre of the sun.

PART II—THE EPHEMERIS FOR THE MERIDIAN OF WASHINGTON.

Page 280 contains the formulæ for reducing the positions of the fixed stars, using the notation of BESSEL, and the constants of PETERS and STRUVE. The formulæ by which the star-numbers are computed are also given.

Pages 281—284 contain the logarithms of the *Besselian Star-Numbers*, *A*, *B*, *C*, *D*, for each Washington mean midnight. These numbers serve to reduce the mean place of a star at the beginning of the Besselian fictitious year to its apparent place at the dates for which the numbers are given. If used in accordance with the English and French notation, the pair of quantities *A* and *B* must be interchanged with the pair *C* and *D;* that is, *A* must be interchanged with *C*, and *B* with *D*. In the first column along with the solar day is given, for certain dates, the sidereal hour and tenth of midnight. The sidereal time for which any set of quantities is given can be found by interpolation from these numbers.

The following is an example of the reduction of a star to apparent place by the Besselian star-numbers: —

Computation of the apparent place of α Hydræ for 1892, *March* 30, *for the upper transit at Washington.*

(Star-Catalogue)	log *a*	0.4699	log *b*	7.8699	log *c*	8.7162 *n*	log *d*	8.6312
(Page 281)	log *A*	8.2490 *n*	log *B*	0.8176 *n*	log *C*	1.2654 *n*	log *D*	0.5845 *n*
(Star-Catalogue)	log *a′*	1.1900 *n*	log *b′*	9.8028 *n*	log *c′*	9.7159	log *d′*	9.0416
	log *A a*	8.7189 *n*	log *B b*	8.6875 *n*	log *C c*	9.9816	log *D d*	9.2157 *n*
	log *A a′*	9.4390	log *B b′*	0.6204	log *C c′*	0.9813 *n*	log *D d′*	9.6261 *n*

		h m s		° ′ ″
Mean Place, 1892.0, (page 296)	$\alpha_0 =$	9 22 16.823	$\delta_0 =$	− 8 11 26.71
	$A a =$	− 0.052	$A a' =$	+ 0.27
	$B b =$	− 0.049	$B b' =$	+ 4.17
	$C c =$	+ 0.959	$C c' =$	− 9.58
	$D d =$	− 0.164	$D d' =$	− 0.42
	$E =$	− 0.002	$\tau \mu' =$	0.00
	$\tau \mu =$	0.000		
Apparent Place, 1892, *Mar.* 30,	$\alpha =$	9 22 17.515	$\delta =$	− 8 11 32.27

Pages 285—292 contain the *Independent Star-Numbers*, which can be used for the same purpose. The column τ gives the fraction of the year from the beginning of the fictitious year to each date. These quantities are connected with those of BESSEL by the relations given on page 280, where are also found the formulæ and precepts for the application of both systems of numbers. In order to use the Besselian numbers, it is necessary to have the values of the star-constants, *a*, *b*, *c*, *d*, *a′*, *b′*, *c′*, *d′*. The independent star-numbers are given in order that the apparent place of the star may be determined when it is not convenient to compute these numbers.

The following is an example of the reduction of a star to apparent place by the independent star-numbers:—

Computation of the apparent place of α *Hydræ for* 1892, *March* 30, *for the upper transit at Washington.*

$\alpha_0 = 140^\circ\ 34'.2$	$\delta_0 = -\ 8^\circ\ 11'.4$
$G = 266\ 54.3$	$G + \alpha_0 = 47\ 28.5$
$H = 258\ 14.5$	$H + \alpha_0 = 38\ 48.7$

						h	m	s
log $\frac{1}{15}$	8.8239	log $\frac{1}{15}$	8.8239	$\alpha_0 =$		9	22	16.823
log g	0.8182	log h	1.2746	$f =$	—			0.057
log sin $(G+\alpha_0)$	9.8674	log sin $(H+\alpha_0)$	9.7970	$(g) =$	—			0.046
log tan δ_0	9.1582 *n*	log sec δ_0	0.0044	$(h) =$	+			0.794
log (g)	8.6677 *n*	log (h)	9.8999	$\tau\mu =$				0.000
		Apparent R. A.,		$\alpha =$		9	22	17.514
						°	′	″
log g	0.8182	log h	1.2746	$\delta_0 =$	—	8	11	26.71
log cos $(G+\alpha_0)$	9.8299	log cos $(H+\alpha_0)$	9.8917	$(g') =$	+			4.44
log (g')	0.6481	log sin δ_0	9.1537 *n*	$(h') =$	—			2.09
		log (h')	0.3200 *n*	$(i) =$	—			7.91
				$\tau\mu' =$				0.00
		Apparent		$\delta =$	—	8	11	32.27
log i	0.9028 *n*							
log cos δ_0	9.9955							
log (i)	0.8983 *n*							

Pages 293—301 contain the mean places of three hundred and eighty-three stars, for the beginning of the fictitious year 1892, or the moment when the sun's mean longitude is 280°.

The annual variations are to be considered as the differential coefficients of each co-ordinate with respect to the time at the beginning of the year.

In order that the list of mean places of stars may serve the purpose of a working-catalogue for the convenient use of astronomers, the position of each of the northern circumpolar stars is given in duplicate, one position being for the upper and the other for the lower culmination. The positions for the lower culmination are marked S. P. In this case, the right ascensions are the sidereal times at which the star crosses the lower meridian; and, in order to have the expressions for the co-ordinates congruous in all cases, the declinations are counted from the equator through the north pole, and therefore exceed 90°. The time of observation and the setting of the circle, in order to find a star on the meridian, are then obtained uniformly for all the stars.

Beginning with the volume of 1882, the number of stars has been greatly increased, in order to make the list more useful to field-astronomers. In order to show at a glance these additional stars, they are indicated in the list by an asterisk.

Pages 302—313 contain the apparent positions of the four north polar stars, α, δ and λ Ursæ Minoris, and 51 Cephei, for every upper transit at Washington. They include the terms depending on the moon's longitude. The mean solar time of transit is given in the column *Mean Solar Date*, in order that each transit above and below the pole may be readily identified. Suppose, for example, that the transit of Polaris below the pole on January 26th is to be found, and we wish to know whether it precedes or follows the upper transit of the same date. On page 302, we find that the upper transit occurs January 26.2; the lower transit, therefore, occurs January 26.7. But, the lower transit following that of July 1st (page 308), does not take place until July 2.3. Hence, the lower transit of July 1st precedes the upper one of the same date. A transit occurring very nearly at noon may also be identified without a computation to ascertain the actual mean date, by simply noting the tenth of a day in the column of *Mean Solar Date.*

Pages 314—364 contain, for every tenth upper transit at Washington, the apparent places of those stars of the preceding list which are not marked with an asterisk. The mean solar date in each left hand column gives the day and tenth of the transit; so that each intermediate transit may be readily identified. Along with each co-ordinate is given, in small type, the change for ten days. This quantity is to be regarded as the differential coefficient corresponding to the dates for which the star-places are given.

Pages 365—376 contain the apparent right ascensions of all stars marked with an asterisk in the list of mean places. The apparent right ascension of each star is given only for that part of the year when it may readily be observed on the meridian. In the case of circumpolar stars, the right ascensions for lower, as well as upper, transit are given.

Pages 377—384 contain the apparent right ascension, declination, and semidiameter of the sun, and the sidereal time, all for Washington mean noon. Adjoining columns give the seconds of right ascension and of declination for apparent noon, that is, for the moment of transit of the sun's centre over the meridian of Washington. The hours and minutes of right ascension, and the degrees and minutes of declination are the same for both mean and apparent noon. In case they would have differed, the minute which would have been numerically larger is diminished by one, and the seconds increased by sixty, so that there is always a correspondence between the two numbers. The hourly motions in right ascension and declination are given for the moment of mean noon, but may be regarded as having the same values for apparent noon.

The *Equation of Time for Apparent Noon* is the correction to be applied to apparent time in order to obtain mean time. It is, therefore, mean time minus apparent time. Each number as given is the mean time of transit of the sun's centre over the meridian of Washington, counted from the nearest noon. The use of all the quantities is substantially the same as in the *Ephemeris for the Meridian of Greenwich.*

Pages 385—392 contain the right ascension, declination, semidiameter, and parallax of the moon, at the moment of transit over the meridian of Washington. The mean time given in the second column is that of transit of the moon's centre over this meridian. The differences for one hour of longitude are the amounts by which the local mean times of transit over a meridian one hour west of Washington exceed those given in the column *Mean Time of Transit*, supposing the rate of change to be uniform and equal to what it is at the moment of transit over the meridian of Washington. The next four columns need no especial explanation, except that the differences for one hour of longitude are computed as if the motion of the moon in right ascension were uniform. By means of them, the position of the moon can be computed with astronomical accuracy at the moment of transit over any meridian not exceeding one hour in longitude from that of Washington, by taking account of second differences. With greater longitudes of the place, the accuracy of the result obtained in this way will diminish. The columns of sidereal time of semidiameter passing meridian, etc., do not seem to need any explanation, except that they all refer to the moment of transit. The column *Bright Limbs* is given to indicate to the observer which limbs are illuminated. When two opposite limbs are both so nearly full that they can be well observed, both are indicated; and the one which is deficient is printed in smaller type. When the illumination is so nearly equal that no choice can be made between them, both are printed in large type.

Pages 393—411 contain the geocentric apparent right ascensions and declinations of the seven major planets and their semidiameters and horizontal parallaxes, for the moments of all those transits over the meridian of Washington, which can be observed.

PART III—PHENOMENA.

This portion of *The American Ephemeris and Nautical Almanac* gives the principal astronomical phenomena of the year, reduced to Washington mean time, except in the case of the eclipses and the data for the rings of Saturn, which are given in Greenwich mean time.

Pages 414—418 inclusive contain the elements necessary for computing the eclipses of the sun which occur during the year.

The eclipse-elements are given for the moment of conjunction of the sun and moon in right ascension. The subsequent tables and results are not, however, computed from these elements unchanged; but from the accurate positions of the two bodies as interpolated for each hour of the eclipse. The principal circumstances of each eclipse are as follow:—

On the line "Eclipse begins" is given the Greenwich mean time at which the earth first touches the moon's penumbra, and the longitude and latitude of the point of touching.

The "Central eclipse begins" when the axis of the moon's shadow first touches the earth, and the longitude and latitude of the point of touching follow.

"Central eclipse at noon" indicates the moment when the axis of the shadow is coincident with the plane of the meridian at the point of its intersection with the earth's surface. To the observer at this point, the eclipse will be central at the moment of apparent noon.

"Central eclipse ends" and "Eclipse ends" have the converse meaning of the beginning.

Maps of the Eclipses.—The regions in which each eclipse is visible, are shown upon the maps given in connection with them. From these maps may also be derived the approximate determination of the times of beginning and ending, and of the magnitude of the eclipses at any place. The dotted curves show the outlines of the shadow for each hour of Greenwich mean time and therefore pass through all the places where the eclipse begins or ends at that hour. To find at what hour the eclipse begins at any place, we determine by inspection between what pair of these curved lines the place is situated. The eclipse will then begin between these two hours of Greenwich mean time: the fraction of the hour may be determined by dividing the hour proportionally to the space which it represents on the map. This division may be a little more exact by allowing for the changes in this space as indicated by their varying width. The Greenwich mean time thus found must be reduced to local mean time by applying the longitude.

As an example, suppose we wish to find the time at which the eclipse of 1892, Oct. 20, begins and ends at Washington.

For the beginning we compare the distance of the place from the curves of 5^h and 6^h and we find it to correspond to about 5.3 minutes from the former, therefore the time of beginning is approximately 5^h 5.3^m; for the end we compare the distance of the place from the curves of 7^h and 8^h and find it to be about 4.5 minutes from the latter, therefore the approximate time of end is 8^h 4.5^m, both of which are probably correct to within 2 or 3 minutes. Changing to local mean time the result will be:—

		Beginning.				Ending.	
		d	h	m		h	m
Greenwich mean time	Oct.	20	5	5.3		8	4.5
Longitude West			5	8.2		5	8.2
Local mean time	Oct.	19	23	57.1	Oct. 20	2	56.3

In the case of total and annular eclipses, a rough estimate of the magnitude of the eclipse may be obtained from the position of the place relatively to the central line and to the limit. On the central line, the eclipse is annular or total, while on the limit, the limb of the moon only grazes that of the sun.

More Accurate Computations.—A more accurate determination of the phases as visible at any point of the earth's surface may be obtained from the Besselian elements which are given for every ten minutes of Greenwich mean time. Their geometric signification is as follows:—

Let us imagine a plane passing through the centre of the earth, perpendicular to the right line joining the centres of the sun and moon. This latter line is the axis of the moon's shadow, and the plane is called the *fundamental plane*. We take the intersection of this plane with that of the earth's equator as the axis of X, and the centre of the earth as the origin of co-ordinates. The axis of Y is perpendicular to that of X, and directed toward the north; x and y are then the co-ordinates of the point in which the axis of the shadow intersects the fundamental plane. The angle d, of which the sine and cosine are both given, is the declination of that point of the celestial sphere toward which the axis of the shadow is directed; this direction being that from the earth toward the moon and sun. The angle μ is the Greenwich hour-angle of this same point of the celestial sphere.

The quantities l and l' are the radii of the shadow-cones upon the fundamental plane, l corresponding to the penumbra, and l' to the umbra, or annulus. The notation is that of **Chauvenet**'s *Spherical and Practical Astronomy*, in which l' is regarded as positive for an annular, and negative for a total eclipse.

The angles f and f', the tangents of which are given, are the angles which the elements of the respective shadow-cones make with the axis of the shadow; or, they are the semi-angles of the two cones.

At the bottom of the table are given the logarithms of the change of x, y and μ, in one minute, in order to facilitate the interpolation to any required moment.

The method of computing the eclipse from the given elements is as follows: It is premised that the moments of beginning and ending are those at which the distance of the observer from the axis of the shadow or penumbra is equal to the radius of the latter at the point of observation. To find such distance and radius we compute—

(1) The co-ordinates, ξ, η and ζ, of the observer, at some assumed moment of Greenwich mean time, as near as practicable to the true time of the required phase, together with their variations for one minute.

(2) The co-ordinates x and y of the axis of the shadow at the same moment, which, with their variations for one minute, are taken from the tables of elements.

(3) Hence, the position and motion of the observer relative to the axis of the shadow.

(4) The radius of the penumbra or umbra at a distance from the fundamental plane equal to that of the observer.

(5) Then, assuming the motions to be uniform, we determine the time required for the observer to be brought to a distance from the axis of the shadow equal to this radius.

The formulæ and directions for the several steps in the computation are as follow:—

(1) Find the geocentric co-ordinates of the station referred to the earth's equator, which are represented by $\rho \cos \varphi'$ and $\rho \sin \varphi'$, ρ being the distance from the centre of the earth, and φ' the geocentric latitude. These may be obtained from geodetic tables, or may be computed from the following table by the formulæ—

$$\rho \cos \varphi' = F \cos \varphi$$

$$\rho \sin \varphi' = \frac{\sin \varphi}{G}$$

φ being, as usual, the geographic latitude.

Table for Computing the Geocentric Co-ordinates of a Place.

φ	Log F.		Log G.	
0°	0.00000		0.00302	
5	0.00001	1	0.00300	2
10	0.00005	4	0.00297	3
15	0.00010	5	0.00292	5
20	0.00018	8	0.00284	8
25	0.00027	9	0.00275	9
30	0.00038	11	0.00264	11
35	0.00050	12	0.00252	12
40	0.00062	12	0.00239	13
45	0.00075	13	0.00226	13
50	0.00088	13	0.00213	13
55	0.00101	13	0.00201	12
60	0.00113	12	0.00189	12
65	0.00124	11	0.00178	11
70	0.00133	9	0.00169	9
75	0.00141	8	0.00161	8
80	0.00146	5	0.00155	6
85	0.00150	4	0.00152	3
90	0.00151	1	0.00151	1

For the assumed Greenwich mean time of computation, take from the table of elements the values of sin d, cos d, and μ. Put:

λ, the longitude west from Greenwich. The co-ordinates of the observer will then be:—

$$\xi = \rho \cos \varphi' \sin (\mu - \lambda)$$
$$\eta = \rho \sin \varphi' \cos d - \rho \cos \varphi' \sin d \cos (\mu - \lambda)$$
$$\zeta = \rho \sin \varphi' \sin d + \rho \cos \varphi' \cos d \cos (\mu - \lambda)$$

and their variations in one minute of mean time will be:—

$$\xi' = [7.63992]\, \rho \cos \varphi' \cos (\mu - \lambda)$$
$$\eta' = [7.63992]\, \rho \cos \varphi' \sin d \sin (\mu - \lambda) = [7.63992]\, \xi \sin d$$

ζ' is not wanted.

(2) The co-ordinates x and y of the axis of the shadow are taken from the tables of elements for the same assumed moment of Greenwich mean time, together with their variations for one minute, which are equal to one-tenth of the differences of two consecutive numbers. The variations for one minute we represent by x' and y'. Their logarithms are given at the foot of the tables.

(3) The distance m and position-angle M of the axis of the shadow relative to the observer, and the relative motions, n and N, are computed by the formulæ:—

$$m \sin M = x - \xi$$
$$m \cos M = y - \eta$$
$$n \sin N = x' - \xi'$$
$$n \cos N = y' - \eta'$$

(4) The radius L of the shadow or penumbra at the distance ζ from the fundamental plane is computed by the formula

$$L = l - \zeta \tan f$$

l and f being found in the table of elements, and ζ computed in (1).

(5) If the time chosen for computation is exactly that of the beginning or end of the eclipse, we shall have—

$$m = L$$

But, as this condition can scarcely ever be fulfilled on a first trial, a correction τ to the assumed time is computed thus: Find the angle ψ from the equation,

$$\sin \psi = \frac{m \sin (M - N)}{L}$$

There will be two values to this angle, of which one will be in the first and the other in the second quadrant when sin ψ is positive, and one in the third and the other in the fourth when sin ψ is negative. But, simplicity will be gained by taking only that value of ψ for which cos ψ is positive. This value lies between the limits + 90° and − 90°. The correction τ to the assumed time will be found in minutes, from—

For beginning: $$\tau = -\frac{m \cos (M - N)}{n} - \frac{L \cos \psi}{n}$$

For ending: $$\tau = -\frac{m \cos (M - N)}{n} + \frac{L \cos \psi}{n}$$

One such pair of values of τ cannot, however, give the times of both beginning and ending with accuracy. To attain accuracy we must, in commencing the computation, assume two times, one near that of beginning, and another near that of ending. These approximate times may be derived from the chart of the eclipse. The computation for the first assumed time will give a small value of τ which, applied to the assumed time, will give a nearly correct time for the beginning of the eclipse, and a large value which, added to the assumed time, will give an inaccurate time of ending. The computation for the second assumed time will give a small and nearly correct value of τ, to be applied to the assumed time for the end, and a large negative and inaccurate one to be subtracted for the beginning. We shall thus deduce two times of each phase only one of which is to be considered approximately correct.

The more accurate times of beginning and ending may now be taken in place of the first assumed ones, and the computation may be repeated from the beginning, leading to a pair of values of τ, which should be very small and accurate. Such a repetition of the computation will in general be advisable, to guard against accidental numerical errors. The following theorem will, however, enable us to obtain a second approximation to the true times of each phase without repeating the computation.

THEOREM.—*The error of each result is approximately proportional to the square of the correction* τ, *multiplied by the sine of the sun's hour-angle*, $(\mu-\lambda)$, *for the middle of the interval between the time of computation and that of the phase.*

To apply this theorem we find the two values of $\tau^2 \sin(\mu-\lambda)$ corresponding to the required phase. We then find the ratio of these quantities—which will commonly be a large number, and divide the difference of the results by this ratio. The quotient will be a correction to be applied to the more accurate result in such a way as to make it deviate yet more from the less accurate one. This correction should be positive in the local forenoon, and negative in the afternoon, and its value should never materially exceed $0^{\mathrm{m}}.001\,\tau^2$.

Unless the times chosen for computation are unusually in error, say ten minutes or more, the corrected results thus obtained will be theoretically correct within less than a second. But to guard against numerical errors it is better, after making this final correction, to repeat the computations so far as to obtain new values of m and L for the corrected times. If these two quantities agree within a unit of the fourth place of decimals, the times employed are generally correct within a second of time. If they differ too widely, further corrections and computations may be made by the computer according to his own judgment.

It may be remarked that the uncertainty of the ephemerides is such that a prediction may be several seconds in error from this unavoidable cause alone.

Position-angle of Point of Contact.—The position-angle P, of the point of contact, reckoned from the north point of the sun's limb toward the east, is found by the formula

For beginning: $P = N - \psi \pm 180°$
For end: $P = N + \psi$

it being assumed that, in each case, the value of ψ is taken between the limits ± 90°.

Computation of the Solar Eclipse of 1892, *October* 20, *for Albany, N. Y.*

Latitude, $= +\ 42°\ 39'\ 49''$
Longitude, $= +\ 73\ \ 44\ \ 47$

Constants for the given place:—

$\rho \sin \varphi' = 9.82879$
$\rho \cos \varphi' = 9.86716$

From the Eclipse Chart we find the approximate times of the phases to be:—

		d	h	
Beginning	October	20	5	Greenwich Mean Time.
Ending	October	20	8	

Greenwich Mean Time,	Beginning. Oct. $20^{\mathrm{d}}\ 5^{\mathrm{h}}$	Ending. Oct. $20^{\mathrm{d}}\ 8^{\mathrm{h}}$
μ	78° 49′ 18″	123° 49′ 48″
λ	73 44 47	73 44 47
$\mu-\lambda$	5 4 31	50 5 1
$\rho \cos \varphi'$	9.86716	9.86716
$\sin(\mu-\lambda)$	8.94677	9.88478
$\log \xi$	8.81393	9.75194
ξ	+ 0.06515	+ 0.56486

Greenwich Mean Time,		Beginning. Oct. 20^d 5^h	Ending. Oct. 20^d 8^h
	$\rho \sin \varphi'$	9.82879	9.82879
	$\cos d$	9.99239	9.99233
		9.82118	9.82112
	(1)	+ 0.66249	+ 0.66240
	$\rho \cos \varphi'$	9.86716	9.86716
	$\sin d$	9.26845 *n*	9.27018 *n*
	$\cos (\mu - \lambda)$	9.99830	9.80731
		9.13391 *n*	8.94465 *n*
	(2)	− 0.13611	− 0.08803
(1)−(2)	η	+ 0.79860	+ 0.75043
	$\rho \sin \varphi'$	9.82879	9.82879
	$\sin d$	9.26845 *n*	9.27018 *n*
		9.09724 *n*	9.09897 *n*
	(3)	− 0.12509	− 0.12559
	$\rho \cos \varphi'$	9.86716	9.86716
	$\cos d$	9.99239	9.99233
	$\cos (\mu - \lambda)$	9.99830	9.80731
		9.85785	9.66680
	(4)	+ 0.72086	+ 0.46430
(3)+(4)	ζ	+ 0.59577	+ 0.33871
	const. log	7.63992	7.63992
	$\rho \cos \varphi' \cos (\mu - \lambda)$	9.86546	9.67447
	$\log \xi'$	7.50538	7.31439
	ξ'	+ 0.003202	+ 0.002062
	const. log	7.63992	7.63992
	$\xi \sin d$	8.08238 *n*	9.02212 *n*
	$\log \eta'$	5.72230 *n*	6.66204 *n*
	η'	− 0.000053	− 0.000459
	$x - \xi$	− 0.32656	+ 0.52692
	$y - \eta$	+ 0.48328	− 0.14795
	$x' - \xi'$	+ 0.004315	+ 0.005456
	$y' - \eta'$	− 0.003722	− 0.003314
	$m \sin M$	9.51396 *n*	9.72175
	$m \cos M$	9.68420	9.17012 *n*
	$\tan M$	9.82976 *n*	0.55163 *n*
	M	325° 57′ 9″	105° 41′ 0″
	$\sin M$	9.74810	9.43188 *n*
	$\log m$	9.76586	9.73824
	$n \sin N$	7.63498	7.73687
	$n \cos N$	7.57078 *n*	7.52035 *n*
	$\tan N$	0.06420 *n*	0.21652 *n*
	N	130° 46′ 50″	121° 16′ 29″
	$\cos N$	9.81503 *n*	9.71528 *n*
	$\log n$	7.75575	7.80507

		Beginning.	Ending.
Greenwich Mean Time,		Oct. $20^d\ 5^h$	Oct. $20^d\ 8^h$
	$\log \zeta$	9.77508	9.52983
	$\tan f$	7.67216	7.67217
		7.44724	7.20200
	$\zeta \tan f$	0.00280	0.00159
	l	0.57129	0.57139
	L	0.56849	0.56980
	$\sin (M-N)$	9.41783 n	9.42939 n
	$\log m$	9.76586	9.73824
	$\operatorname{colog} L$	0.24528	0.24428
	$\sin \psi$	9.42897 n	9.41191 n
	ψ	$-15^\circ\ 34'\ 33''$	$-\ 14^\circ 57' 42''$
	$\log \frac{m}{n}$	2.01011	1.93317
	$\cos (M-N)$	9.98459 n	9.98372
		1.99470 n	1.91689
	$-\frac{m}{n} \cos (M-N)$	$+\ 98^m.787$	$-\ 82^m.583$
	$\log L$	9.75472	9.75572
	$\cos \psi$	9.98375	9.98502
	$\operatorname{colog} n$	2.21425	2.19493
		1.98272	1.93567
	$\frac{L \cos \psi}{n}$	$+\ 96^m.100$	$+\ 86^m.232$
	τ	$+\ 2^m.687$	$+\ 3^m.649$
	T	Oct. 20^d, 5^h $0^m.000$	8^h $0^m.000$
	t	Oct. 20, 5 2.687	3 3.649
	λ	4 54.986	4 54.986
Albany Mean Time,		Oct. 20, 0 7.701	3 8.663

Therefore we have finally

		d	h	m	s	
Beginning of the eclipse,	Oct.	20	0	7	42.0	} Albany Mean Time.
End of the eclipse,	Oct.	20	3	8	39.8	

Angle of position:

	Beginning	Ending
N	$130^\circ\ 46'.8$	$121^\circ\ 16'.5$
$\psi\ (+\ 180)$	$-\ 15\ \ 34.5$	$-\ 14\ \ 57.7$
	326 21.3	106 18.8

from the north point of the sun's limb toward the east.

Elements of Occultations.—Pages 420—449 give the elements for the prediction of the times of occultation of stars and planets by the moon. In the columns referring to the star, those headed *Red'ns from* 1892.0 give the quantities necessary to reduce the mean place of the star at the beginning of 1892 to its apparent place at the time of occultation. These reductions are sufficiently accurate to be definitive.

The quantities in the following five columns are all given for the moment of geocentric conjunction of the star and moon in right ascension. Let there be a line passing from the star through the centre of the moon, and let a plane perpendicular to this line pass through the centre of the earth: this plane will be the fundamental plane for the occultation. The system of co-ordinates is similar to that already described for eclipses. The cone circumscribing the moon and star may be regarded as a cylinder having everywhere the same diameter as the moon. This cylinder will intercept the fundamental plane in a circle of which the linear diameter will be the same as that of the moon.

The *Washington Mean Time* is the moment at which the two bodies are in geocentric conjunction in right ascension. At this moment the co-ordinate x of the axis of the cylinder on the fundamental plane has the value zero. The column *Hour-Angle H* gives the common geocentric hour-angle of the moon and star at the same moment, counted from the meridian of Washington—positive toward the west and negative toward the east. Column Y gives the co-ordinate y of the axis of the cylinder upon the fundamental plane at the same moment. Columns x' and y' give the hourly variation of x and y. The linear unit in these columns is the earth's equatorial radius. The limiting parallels, north and south, show the extreme limits of latitude within which the occultation will be visible.

By the aid of these elements, the Washington mean time of immersion and emersion of a star behind the limb of the moon may be computed for any part of the earth by a method nearly the same as that already explained for computing eclipses, only more simple.

We shall first show how to compute an isolated occultation for a particular place, assuming it to be visible at that place, and then show how all the occultations which will be visible at a place may be selected and computed by a more rapid process.

(1) The geocentric co-ordinates of the place, $\rho \sin \varphi'$ and $\rho \cos \varphi'$, are to be computed with three or four places of decimals by the formulæ,

$$\rho \sin \varphi' = \frac{\sin \varphi}{G}$$

$$\rho \cos \varphi' = F \cos \varphi$$

already given in connection with the eclipses.

As in the case of eclipses, it is necessary to have an approximate time of the phenomenon, corresponding to that obtained from the charts of the eclipses. The quantity H being the Washington west hour-angle of the two bodies at the moment of geocentric conjunction, $H - \lambda$ will be the local hour-angle of the star at this same moment. Let us call this angle h_0, putting

$$h_0 = H - \lambda$$

where λ is the longitude west of *Washington.*

The next step will then be to find the approximate moment of apparent conjunction in right ascension as seen from the place. An approximate correction to reduce the time and hour-angle for geocentric conjunction to those for apparent conjunction may be taken from Mr. Downes's table, on pages 450—451. This correction will have the same sign as h_0.

When this table is not available, the correction may be computed thus: Compute the quantities ξ_0, ξ' and τ from the formulæ,

$$\xi_0 = \rho \cos \varphi' \sin h_0$$

$$\xi' = [9.4192] \cos (h_0 + \tfrac{1}{3} h_0)$$

$$\tau = \frac{\xi_0}{x' - \xi'}$$

τ will then be the approximate interval between the times of geocentric and local conjunction.

By applying it to the Washington mean time of the former, as given with the elements, we shall have the Washington mean time of the latter within a few minutes.

The average duration of an occultation is about an hour. Thence, by adding $0^h.5$ to and subtracting it from the mean time of apparent conjunction, we shall have approximate times of the phases of immersion and emersion for farther computation. Let us then put,

$\tau_1 = \tau - 0^h.5$

$\tau_2 = \tau + 0^h.5$

T, the Washington mean time of geocentric conjunction in R. A.

d, the declination of the star.

(2) Compute for the moments $T + \tau_1$ and $T + \tau_2$ the following quantities, in which we write τ for each of the quantities τ_1 and τ_2. The latter, when used as angles, are to be changed to arc by multiplying by 15, and the minutes are to be further increased by one-sixth the number of degrees in order to reduce to the sidereal hour-angle.

$$\xi = \rho \cos \varphi' \sin (h_0 + \tau)$$
$$\eta = \rho \sin \varphi' \cos d - \rho \cos \varphi' \sin d \cos (h_0 + \tau)$$
$$\xi' = [9.4192]\ \rho \cos \varphi' \cos (h_0 + \tau)$$
$$\eta' = [9.4192]\ \rho \cos \varphi' \sin d \sin (h_0 + \tau) = [9.4192]\ \xi \sin d$$
$$x = x' \tau$$
$$y = Y + y' \tau$$

Compute m, M, n and N from the equations

$$m \sin M = x - \xi$$
$$m \cos M = y - \eta$$
$$n \sin N = x' - \xi'$$
$$n \cos N = y' - \eta'$$
$$n' = \frac{n}{60} = [8.2218]\ n$$
$$\sin \psi = [0.5650]\ m \sin (M - N)$$

Then, t_1 and t_2 from the equations

$$t_1 = -\frac{m}{n'} \cos (M - N) - \frac{[9.4350]}{n'} \cos \psi \quad \text{(Beginning.)}$$
$$t_2 = -\frac{m}{n'} \cos (M - N) + \frac{[9.4350]}{n'} \cos \psi \quad \text{(End.)}$$

The quantities t_1 and t_2 will then be the corrections in minutes to be applied to the respective times $T + \tau_1$ and $T + \tau_2$ to obtain the Washington mean times of the phases.

As in the case of eclipses, the small value of t_1 will give an accurate result for one phase, and the large value an inaccurate result for the other. Both accurate results may then be corrected by comparison with the inaccurate one, in the way described for eclipses, and a result obtained which will probably be correct within a fraction of a minute of time.

As a check upon the result, it will be advisable to compute ξ, η, x and y for the moments finally obtained. If the times are correct these quantities will fulfil the condition,

$$\sqrt{(x - \xi)^2 + (y - \eta)^2} = 0.2723$$

If $\log m \sin (M - N) = 9.4350$ nearly, a recalculation will generally be necessary to determine whether, numerically, $\sin \psi < 1$, or $\sin \psi > 1$. In the latter case, the impossible value of $\sin \psi$ indicates that an occultation at the given place is impossible, unless the computed distance from the moon's limb is within the errors of the ephemerides of the moon and star.

In such cases of near approach to the moon's limb, we may take $\psi = 90°$, or $270°$, according as $\sin (M - N)$ is positive or negative; and for finding the time of nearest approach,

$$t = -\frac{m \cos (M - N)}{n'}$$

Putting π for the moon's horizontal parallax, the distance from the moon's limb will be,

$$\pi\,[m \sin (M - N) - 0.2723]$$

disregarding the sign of $\sin (M - N)$; or, allowing for the augmentation of the semidiameter,

$$\pi\,[m \sin (M - N) - 0.2723]\,[1 + z \sin \pi]$$

where

$$z = \rho \cos \varphi' \cos d \cos (h_0 + \tau) + \rho \sin \varphi' \sin d$$

The position-angle P, of the line from the moon's centre to the star at the times of contact, reckoned from the north point toward the east, is given by the formulæ: —

$$P = N - \psi' \qquad \text{for immersion,}$$
$$P = N + \psi' \pm 180^\circ \qquad \text{for emersion,}$$

it being supposed that the value of ψ', in each case, is taken between the limits $\pm 90^\circ$.

To find the angle from the vertex, we compute the angle C from the formula,

$$\tan C = \frac{\xi + t\,\xi'}{\eta + t\,\eta'}$$

in which the value of t corresponding to the phase is to be used. Then

$$V = P - C$$

is the angle from the vertex, also reckoned from the north toward the east.

As an example of an isolated occultation, we will compute that of γ^1 Virginis, on April 10, 1892, for Princeton, N. J., whose position is

$$\varphi = + 40^\circ\ 20'\ 57''.8$$
$$\lambda = -\ 0^h\ 9^m\ 34^s.54$$

Constants for the given place,

$$\rho \sin \varphi' = 9.80890$$
$$\rho \cos \varphi' = 9.88263$$

From the table of elements, page 427, we have

$$H = -\ \overset{h}{3}\ \overset{m}{8.0}$$
$$h_0 = H - \lambda = -\ 2\ 58.424$$

From DOWNES's Table, pages 450—451, or from the formulæ on page 510, we find the correction to the Washington mean time of geocentric conjunction, as given on page 427, to be $-1^h\ 20^m$, therefore the Washington mean time of apparent conjunction at the given place is April $10^d\ 6^h\ 49^m.3$.

Subtracting and then adding 30^m we shall have the approximate Washington mean times of immersion and emersion to be used in the computation, thus:

$$\tau_1 = -\ \overset{h}{1}\ \overset{m}{50} \qquad T + \tau_1 = \text{April}\ \overset{d}{10}\ \overset{h}{6}\ \overset{m}{19.3}$$
$$\tau_2 = -\ 0\ 50 \qquad T + \tau_2 = \text{April}\ 10\ 7\ 19.3$$

		Immersion.	Emersion.
		h m	h m
Washington Mean Time,	April 10,	6 19.3	7 19.3
	h_0	− 2 58.424	− 2 58.424
	τ (in sidereal time)	− 1 50.301	− 0 50.137
	$h_0 + \tau$	− 4 48.725	− 3 48.561
	$h_0 + \tau$ (in arc)	− 72° 10′ 52″	− 57° 8′ 25″
	$\rho \cos \varphi'$	9.88263	9.88263
	$\sin (h_0 + \tau)$	9.97864 *n*	9.92428 *n*
	$\log \xi$	9.86127 *n*	9 80691 *n*
	ξ	− 0.72655	− 0.64108

		Immersion.	Emersion.
Washington Mean Time,	April 10,	$6^h\ 19^m.3$	$7^h\ 19^m.3$
	$\rho \sin \varphi'$	9.80890	9.80890
	$\cos d$	$9.9999\bar{5}$	$9.9999\bar{5}$
		9.80885	9.80885
	(1)	+ 0.64394	+ 0.64394
	$\rho \cos \varphi'$	9.88263	9.88263
	$\sin d$	8.17636 *n*	8.17636 *n*
	$\cos (h_0 + \tau)$	9.48573	9.73447
		7 54472 *n*	7.79346 *n*
	(2)	− 0.00350	− 0.00621
(1)−(2)	η	+ 0.64744	+ 0.65015
	const. log	9.41920	9.41920
	$\rho \cos \varphi' \cos (h_0 + \tau)$	9.36836	9.61710
	$\log \xi'$	8.78756	9.03630
	ξ'	+ 0.06131	+ 0.10872
	const. log	9.41920	9.41920
	$\xi \sin d$	8.03763	7.98327
	$\log \eta'$	7.45683	7.40247
	η'	+ 0.00286	+ 0.00253
	$\log x'$	9.68824	9.68824
	$\log \tau$	0.26324 *n*	9.92082 *n*
	$\log x$	9.95148 *n*	9.60906 *n*
	x	− 0.89430	− 0.40650
	$\log y'$	9.40037 *n*	9.40037 *n*
	$\log y' \tau$	9.66361	9.32119
	$y' \tau$	+ 0.46090	+ 0.20950
	Y	+ 0.56660	+ 0.56660
	$Y + y' \tau = y$	+ 1.02750	+ 0.77610
	$x - \xi$	− 0.16775	+ 0.23458
	$y - \eta$	+ 0.38006	+ 0.12547
	$x' - \xi'$	+ 0.42649	+ 0.37908
	$y' - \eta'$	− 0.25426	− 0.25393
	$m \sin M$	9.22466 *n*	9.37028
	$m \cos M$	9.57985	9.09854
	$\tan M$	9.64481 *n*	0.27174
	M	336° 11′ 3″	61° 51′ 30″
	$\sin M$	9.60616 *n*	9.94536
	$\log m$	9.61850	9.42492
	$n \sin N$	9.62991	9.57873
	$n \cos N$	9.40528 *n*	9.40471 *n*
	$\tan N$	0.22463 *n*	0.17402 *n*
	N	120° 48′ 8″	123° 48′ 58″
	$\cos N$	9.70934 *n*	9.74549 *n*
	$\log n$	9.69594	9.65922
	colog 60	8.22185	8.22185
	$\log n'$	7.91779	7.88107

		Immersion.	Emersion.
Washington Mean Time,	April 10,	$6^{h}\ 19^{m}.3$	$7^{h}\ 19^{m}.3$
	const. log	0.56500	0.56500
	$\log m$	9.61850	9.42492
	$\sin (M - N)$	9.76269 n	9.94575 n
	$\sin \psi$	9.94619 n	9.93567 n
	ψ	62° 4′ 0″	− 59° 34′40″
	$\log \frac{m}{n'}$	1.70071	1.54385
	$\cos (M - N)$	9.91133 n	9.67223
		1.61204 n	1.21608
	$-\frac{m}{n} \cos (M - N)$	$40^{m}.930$	$16^{m}.447$
	const. log	9.43500	9.43500
	co-log n'	2.08221	2.11893
	$\cos \psi$	9.67066	9.70447
		1.18787	1.25840
	$\frac{[9.43500] \cos \psi}{n'}$	+ $15^{m}.413$	+ $18^{m}.130$
	t_1	+ 25.517	+ 1.683
		6^{h} 19.300	7^{h} 19.300
Washington Mean Time of Phase, April 10,		6 44.817	7 20.983
	λ	− 0 9.576	− 0 9.576
Princeton Mean Time, April 10,		6 54.393	7 30.559

A recomputation for the time of immersion gives April $10^{d}\ 6^{h}\ 54.^{m}364$, which differs from the preceding by less than two seconds

Angle of position:

	Immersion.	Emersion.
N	120° 48′.1	123° 49′.0
$\psi\ (+\ 180°)$	− 62 4.0	− 59 34.7
P	182 52.1	244 14.3

from the north point of the moon's limb toward the east.

Prediction of Many Occultations for a Given Place.—When it is desired to predict all the occultations which will be visible at some one place, tables may be constructed and applied in such a way as to greatly diminish the labor of computation. In using such tables, the most convenient course will be to find for each occultation the hour-angle of the star at the moment of apparent conjunction in right ascension, as seen from the place of observation. The table of elements, pages 420—449, gives H, the Washington hour-angle at the moment of geocentric conjunction. The corresponding geocentric hour-angle at the place will be

$$h_0 = H - \lambda \qquad (\lambda = \text{west longitude from Washington})$$

The moment of apparent conjunction, as seen from the station, will be given by the condition $\xi = x$; or, using the values of ξ and x,

$$\rho \cos \varphi' \sin h = x' \tau$$

h being the west hour-angle of the star at the moment in question, and τ the interval, in hours of mean time, which has elapsed since geocentric conjunction. We shall therefore have,

$$h = h_0 + \tau$$

for the hour-angle at the end of the interval τ after geocentric conjunction. In strictness, τ should here be multiplied by the factor $1 + \frac{1}{365.25}$, because the star moves a little more than 15° in an hour of mean time; but the error arising from the neglect of the factor is too small to be important, as it will affect the predicted time of conjunction by less than 10 seconds. The equation for finding τ is therefore,

$$\rho \cos \varphi' \sin (h_0 + \tau) = x' \tau$$

The quantities h_0 and x' being derived immediately from the data of the Ephemeris, the quantity τ is readily obtained by successive approximation, and may be tabulated as a function of h_0 and x'. The computation of τ is effected as follows. We have

$$\sin (h_0 + \tau) = \sin h_0 + 2 \sin \tfrac{1}{2} \tau \cos (h_0 + \tfrac{1}{2} \tau) \qquad (1)$$

The value of τ in arc being seldom more than 24° we may put τ itself for $2 \sin \frac{1}{2} \tau$. The equation will then become

$$\rho \cos \varphi' \sin h_0 + \tau \rho \cos \varphi' \cos (h_0 + \tfrac{1}{2}\tau) = x' \tau$$

from which we find

$$\tau = \frac{\rho \cos \varphi' \sin h_0}{x' - \rho \cos \varphi' \cos (h_0 + \frac{1}{2}\tau)} \qquad (2)$$

To tabulate τ, we must first have a table of the quantities

$$\begin{aligned} \xi &= \rho \cos \varphi' \sin h \\ \xi' &= [9.41916]\, \rho \cos \varphi' \cos h \end{aligned} \qquad (3)$$

which table may be formed for every 10 minutes (in time) of h. If we then put ξ_0 for the value of ξ corresponding to $h = h_0$ and ξ'_1 for the value of ξ' corresponding to $h = h_0 + \frac{1}{2}\tau$, we shall have

$$\tau = \frac{\xi_0}{x' - \xi'_1} \qquad (4)$$

Since we must know the value of τ, approximately, before we can take ξ'_1 from the table, this equation can be solved only by successive approximations. The approximations converge so rapidly as to offer no difficulty. It will be best to begin by comparing values of τ for the two extremes of x', namely, $x'=0.48$ and $x'=0.60$, because the approximate values of τ can then be interpolated for all the intermediate values of x'. For the first approximation may be taken—

$$\begin{aligned} \tfrac{1}{2}\tau &= 50^{m} \sin \tfrac{4}{3} h_0 \quad (\text{for } x' = 0.48) \\ \tfrac{1}{2}\tau &= 40^{m} \sin \tfrac{4}{3} h_0 \quad (\text{for } x' = 0.60) \end{aligned} \qquad (5)$$

or, the approximate values of τ may be taken from Mr. DOWNES's table, pages 450—451. It will be best to make the computation for every 30^{m} of h_0, and to find the intermediate values of τ for every 10^{m} by interpolation. Then for each 30^{m} of h_0 we take ξ' from a table with the argument $h_0 + \frac{1}{2}\tau$, and log ξ with the argument h_0, and thence compute τ by (4). If the value of τ thus arrived at differs more than 3^{m} from that employed in taking out ξ', a new value may be used to correct ξ', and the computation may be repeated. The values corresponding to $x' = 0.51$, $x' = 0.54$, and $x' = 0.57$, can then be computed with the single interpolation of approximate values of τ, and afterward the table can be extended by interpolation to every 0.01 of x' between $x' = 0.48$ and $x' = 0.60$. It will be best to compute τ in the first place to every 0.001 of an hour, and to drop the last figure in forming the definitive table. The table thus formed will be called *Table I.*

The values of η and η' may then be tabulated for every degree of the star's declination, and every 10^{m} of h. It is a mere question of convenience whether to compute the table for negative values of d, since by putting

$$\begin{aligned}\eta_1 &= \rho \sin \varphi' \cos d \\ \eta_2 &= -\rho \cos \varphi' \sin d \cos h\end{aligned}$$

η_1 may be given in a table of single-entry; and taking η_2 from the table of double-entry for a positive d, we shall have

$$\eta = \eta_1 \pm \eta_2$$

the lower sign being used for a negative d. But the extension of the table for η to negative values of d is so readily made that it will probably be found better to do it, so as to save taking out η_1 and η_2 separately.

This table for η will be called *Table II*, and the corresponding one for η' with the same arguments *Table III*. The precepts for using the tables will then be as follow: —

From Table I with the arguments x' and $H - \lambda = h_0$ take out the value of τ. It will be sufficient to use the nearest 0.01 of x'. τ will be of the same sign as h_0. Then, enter Table II with the arguments d (the star's declination) and $h = h_0 + \tau$, and take out the value of η. Form the quantities $y = Y + y'\tau$, and $y - \eta$. If the latter quantity lies between the limits ± 0.28, it is almost certain that there will be an occultation. If it falls without the limits ± 0.33, it is almost certain that there will not be an occultation. Between the years 1881 and 1892 these last limits may be reduced to ± 0.32, and cases near this limit may be rejected if y' is small. A convenient rule to adopt will be —

$$\begin{array}{rl} y' < 0.10, & = \pm 0.29 \\ 0.10 < y' < 0.15, & = \pm 0.30 \\ 0.15 < y' < 0.20, & = \pm 0.31 \\ 0.20 < y' & = \pm 0.33 \text{ or } \pm 0.32 \end{array}$$

Here, only the absolute value of y' is to be considered, without respect to its algebraic sign.

If $y - \eta$ falls between the limits thus indicated, take the values of ξ' and η' from the appropriate tables and compute v, Q and Δ from the equations

$$\begin{aligned} v \sin Q &= y' - \eta' \\ v \cos Q &= x' - \xi' \\ \Delta &= (y - \eta) \cos Q \end{aligned}$$

If $\Delta > 0.2723$ or $\log \Delta > 9.4350$ there will be no occultation, though the moon may graze the star when $\Delta - 0.2723$ is very small. If $\Delta < 0.2723$, compute

$$\tau_1 = -\frac{y - \eta}{v} \sin Q \qquad \cos P = \frac{\Delta}{0.2723} \qquad (P < 180^\circ)$$

$$\tau_2 = \frac{0.2723 \sin P}{v}$$

We shall then have —

Local mean time of immersion, $T - \lambda + \tau + \tau_1 - \tau_2$
Local mean time of emersion, $T - \lambda + \tau + \tau_1 + \tau_2$
Position-angle from north toward east at immersion, $180^\circ - Q - P$
Position-angle from north toward east at emersion, $180^\circ - Q + P$

In predicting the occultations for a given place, the first operation will be to go over the list of occultations in the Ephemeris, and select those which may be visible. The conditions of possible visibility are: —

1. The limiting parallels in the last columns must include the latitude of the place.

2. The quantity $H - \lambda$, taken without regard to sign, must be less than the semi-diurnal arc of the star by at least one hour. On very rare occasions an emersion might be seen in the east horizon, or an immersion in the west, when this difference is a few minutes less than an hour.

3. The sun must not be much more than an hour above the horizon at the local mean time $T - \lambda$, unless the star is bright enough to be seen in the day time.

The most convenient course will be to write the value of $-\lambda$ on the bottom of a sheet of paper, and, passing through the list of occultations, pause over each one for which condition (1) is fulfilled, and examine whether conditions (2) and (3) are fulfilled. If either fails, the computer passes on. Very often it will require some examination to find whether $H - \lambda$ or $T - \lambda$ falls within the limits; in these cases, the computer may mark the occultation for trial and leave the decision for the subsequent operations. The whole list can be gone over in less than a day, and it will probably be found that about one-tenth of the occultations are marked for trial.

Phenomena of Planets and Satellites, pages 452—485.—These are, for the most part, sufficiently explained in the body of the work. The following additional explanations are added for completeness.

Disks of Mercury and Venus, pages 452—453.—The angle θ, needed in reducing meridian observations, is the angle which the arc of the great circle from the planet to the sun, makes with the arc from the planet toward the west, reckoned in the direction west, north, east, south. This position-angle is reckoned from 0° to 360°, as in the measurement of double stars, the planet taking the place of the central star. But its measure is 90° greater than that of a double star.

We may also regard θ as expressing the angle which the line of cusps makes with the meridian, the positive direction of the meridian being toward the north, and the positive direction of the line of cusps that in which a person following this line would have the illuminated portion of the disk on his right.

Satellites and Disk of Mars, page 454.—This page gives the Washington mean time of the greatest eastern and western elongations, the position angles and the distances of the satellites from the centre of the planet during the month preceding and following opposition.

Satellites of Jupiter, pages 455—479.—The times of phenomena are explained at the foot of each page; the diagram is on page 455.

Phenomena, pages 486—487.—The conjunctions, quadratures, and oppositions of the planets with respect to the sun, give the hours when the longitude of each planet differs from that of the sun by 0°, 90° or 180°.

The conjunctions of the moon and planets with each other are given in right ascension. The degrees and minutes to the right show the difference of declination at the moment of conjunction.

Latitude by Observed Altitude of Polaris.—Table IV replaces the Tables A, B, C, D, given as a *Supplement* to the volumes of the Ephemeris for 1874—1881, and is intended for use at sea and reconnaissance on land. It will furnish an approximate value of the latitude, the probable error of which, in so far as the table is concerned, will be a few tenths of a minute of arc.

The directions for using the table are adapted to a right ascension of Polaris equal to $1^h\ 18^m.9$. Somewhat greater accuracy may be insured by substituting the right ascension of Polaris at the date of observation, from pages 302—313 of this volume.

APPENDIX.

ON THE CONSTRUCTION OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC FOR 1892.

The adopted constants of precession, nutation, and aberration are those of **Struve** and **Peters**, namely:—

$$\begin{aligned} \text{Precession} &= 50''.2411 + 0''.0002268\ t \\ \text{Nutation} &= 9''.2231 + 0''.000009\ t \\ \text{Aberration} &= 20''.4451 \end{aligned}$$

in which t is the number of years after 1800.0.

The obliquity of the ecliptic is that of **Hansen**'s *Tables du Soleil*, which is 0".31 greater than that of **Peters**, given in the issues of this Ephemeris preceding that for 1882. A comparison of **Hansen**'s mean obliquity with that of **Peters** and of **Le Verrier** at different epochs is given in the following table:—

Epoch.	Hansen.	Peters.	Le Verrier.	H.—P.	H.—L.
	° ' "	"	"	"	"
1750	23 28 18.19	17.44	19.42	+0.75	−1.23
1800	23 27 54.80	54.22	55.63	+0.58	−0.83
1850	23 27 31.42	30.99	31.83	+0.43	−0.41
1900	23 27 8.02	7.76	8.03	+0.26	−0.01

The formulæ for reducing the places of the fixed stars, page 280, correspond to the *Star Tables of the American Ephemeris*, Washington, 1869.

The mean right ascensions of stars have been reduced to **Newcomb**'s fundamental standard in the catalogue attached to the *Washington Observations for* 1870, Appendix II, with the following exceptions: The right ascensions of the 48 circumpolar stars north of 60° north declination are from Dr. **Gould**'s *Standard Places of Fundamental Stars*, second edition, United States Coast Survey Office, 1866. Of the twelve stars south of 50° south declination, the positions of β Hydri, α Trianguli Australis, and σ Octantis, have been corrected from data furnished by Dr. **Gould**; while the remaining nine are, as before, from the *British Nautical Almanac* for 1848.

The right ascensions of the additional stars in the general list, whose apparent right ascensions are given in a subsequent section, have been taken partly from the *Catalogue of* 1098 *Standard Clock and Zodiacal Stars*, forming Part IV of Vol. I of *Astronomical Papers Prepared for the Use of the American Ephemeris and Nautical Almanac*, Washington, 1881; and partly from the catalogue of the Astronomische Gesellschaft of 1878. A few have been derived from recent catalogues without a rigorous reduction for equinox.

The mean declinations of stars are taken from Boss's paper in the *Report of the Northern Boundary Commission*, Washington, 1879, for all stars found therein. The declinations of all the other stars have been reduced to the same standard, except those of the additional ones above, which have been taken partly from the Astronomische Gesellschaft list, and partly from places in recent catalogues. To the apparent places of Sirius and Procyon have been applied the periodic corrections resulting from **Auwers**'s investigations.

The values of these corrections are:—

Year.	Sirius.		Procyon	
	s	"	s	"
1892.0	$\Delta\alpha = +0.148$	$\Delta\delta = +0.28$	$\Delta\alpha = +0.060$	$\Delta\delta = +0.55$
1893.0	$\Delta\alpha = +0.150$	$\Delta\delta = +0.71$	$\Delta\alpha = +0.065$	$\Delta\delta = +0.41$

The ephemeris of the sun is constructed from HANSEN *and* OLUFSEN's *Tables du Soleil*, Copenhagen, 1853, except that STRUVE's aberration has been used. This is equivalent to adding $0''.19$ to the true longitudes, but it does not affect the right ascensions and declinations. The sun's rectangular equatorial co-ordinates have been computed from the longitudes and latitudes by the following formulæ: —

$$\begin{aligned} X &= R \cos \lambda \\ Y &= R \sin \lambda \cos \omega - 19.3\ R\ \beta \\ Z &= R \sin \lambda \sin \omega + 44.5\ R\ \beta \end{aligned}$$

The reductions to mean equinox, 1892.0, are computed by the formulæ,

$$\begin{aligned} \Delta X' &= + Y \sec \omega\ \Delta \lambda \sin 1'' \\ \Delta Y' &= - X \cos \omega\ \Delta \lambda \sin 1'' + Z\ \Delta \omega \sin 1'' - 9.4\ \tau\ R \sin (\lambda + 187^\circ) \\ \Delta Z' &= - X \sin \omega\ \Delta \lambda \sin 1'' - Y\ \Delta \omega \sin 1'' + 21.7\ \tau\ R \sin (\lambda + 187^\circ) \end{aligned}$$

Wherein—

λ and β are the longitude and latitude of the sun referred to the equinox and ecliptic of the date;
ω, the obliquity of the ecliptic;
$\Delta \lambda$, the reduction of longitude for precession and nutation from January 0;
$\Delta \omega$, the reduction of the mean to the apparent obliquity;
τ, the fraction of the year since January 0.

The numerical coefficients are in units of the seventh place of decimals. The correction for latitude has been taken from GOETZE's paper in the *Astronomical Journal*, Vol. II, page 71.

The mean equatorial horizontal parallax of the sun, adopted from Professor NEWCOMB's *Investigation of the Distance of the Sun and the Elements which depend on it*,* is $8''.848$. The adopted semidiameter of the sun at the earth's mean distance is $16'\ 2''$. In the computations pertaining to eclipses, BESSEL's semidiameter, $15'\ 59''.788$ has been used.

The right ascension, declination and parallax of the moon are derived from HANSEN's *Tables de la Lune*, London, 1857, the mean longitude being corrected in accordance with NEWCOMB's *Researches on the Motion of the Moon*, Part I, page 268,† and a corrected table being substituted for Table XXXIV.

The semidiameter of the moon is computed from the moon's horizontal parallax by the formula,

$$S = 0.272274\ \pi + 2''.5$$

The constant $2''.5$ is omitted in the computation of eclipses and occultations, as due entirely to telescopic and ocular irradiation.

The ephemeris of Mercury is derived from Professor WINLOCK's *Tables of Mercury*, Washington 1864. They are based on the older theory of LE VERRIER, published in the Additions to the *Connaissance des Temps* for 1848.

The ephemeris of Venus is derived from Mr. G. W. HILL's *Tables of Venus*, Washington, 1872.

The ephemeris of Mars is derived from manuscript tables constructed from LINDENAU's Tables. Mr. HUGH BREEN's results, contained in his paper *On the Corrections of* LINDENAU's *Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX, have also been discussed and applied; and LE VERRIER's secular variations of the elements are likewise adopted. The perturbations produced by Jupiter have been increased by $\frac{1}{50}$ of their value. The following are the corresponding corrected elements and annual variations for Washington, 1855.0: —

$$\begin{array}{lcrrrcrl} L & = & 320^\circ & 13' & 33''.87 & + & 689101''.1527 & t \\ \pi & = & 333 & 23 & 17.84 & + & 65.9990 & t \\ \Omega & = & 48 & 25 & 55.29 & + & 27.6997 & t \\ i & = & 1 & 51 & 2.20 & - & 0.02141 & t \\ e & = & \multicolumn{3}{r}{19238''.75} & + & 0.18549 & t \\ n & = & \multicolumn{3}{r}{689050''.8927} & & & \\ a & = & \multicolumn{3}{l}{1.5236915} & & & \end{array}$$

The ephemeris of Jupiter is derived from manuscript tables constructed from BOUVARD's Tables, with such changes as were required to make them correspond more nearly to the formulæ.

The ephemeris of Saturn is derived from a provisional theory constructed by Mr. GEORGE W. HILL, and still unpublished.

The ephemerides of Uranus and Neptune are derived from Professor NEWCOMB's Tables, published by the *Smithsonian Institution*.

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* *Astronomical Observations made at the U. S. Naval Observatory, Washington*, 1865, Appendix II.

† *Astronomical Observations made at the U. S. Naval Observatory, Washington*, 1875, Appendix II.

The semidiameters of the planets are computed from the following values:—

	Semidiameter.	Log Dist.	Authority.
Mercury	3″.34	0.00	Le Verrier, *Theory of Mercury.*
Venus	8.546 ± 0.086	0.00	Peirce, from the Washington Observations of 1845 and 1846, made with the Mural Circle.
Mars	2.842 ± 0.057	0.25	
Jupiter (polar)	18.78 ± 0.067	0.70	
Saturn (polar)	8.77 ± 0.039	0.95	
Uranus	1.68 ± 0.3	1.30	
Neptune	1.28	1.48	
Jupiter (equatorial)	20.00	0.70	
Saturn (equatorial)	9.38	0.95	

The elements of eclipses of the sun and occultations of stars by the moon are adapted to **Bessel**'s method, using the special forms in **Chauvenet**'s *Spherical and Practical Astronomy.* The adopted semidiameters are:—

Semidiameter of the sun at distance unity. . . .	959″.788
Ratio of radius of moon to radius of earth . . .	0.27227.

The eclipses of Jupiter's satellites are computed from **Todd**'s *Continuation of* **Damoiseau**'s *Tables* Washington, 1876. The occultations, transits, etc., are computed from **Woolhouse**'s Tables, *British Nautical Almanac* for 1835, Table II of each satellite having been adapted to **Damoiseau**'s Tables.

The elongations and conjunctions of the satellites of Saturn are computed from manuscript tables prepared by Professor **Newcomb**, except those of Titan, Hyperion, and Iapetus.

The apparent elements of the rings of Saturn are computed from **Bessel**'s data, except those for the dusky ring.

The elongations of the satellites of Uranus, and of the satellite of Neptune are computed from the data of Professor **Newcomb**'s *Uranian and Neptunian Systems*, Washington, 1875.

In compiling the positions of observatories, the latest available data have been used. The positions have been furnished, in many instances, through the courtesy of the directors of the Observatories, in response to a circular issued by the Superintendent of the American Ephemeris.

The reduction to geocentric latitude, and the logarithm of the radius of the earth, are derived from **Bessel**'s elements of the terrestrial spheroid, as adopted in Table III of **Chauvenet**'s *Spherical and Practical Astronomy*, Vol. II:—

$$\log e = 8.9122052$$

$$\varphi' - \varphi = -11'\,30''.65 \sin 2\varphi + 1''.16 \sin 4\varphi$$

$$\log \rho = 9.9992747 + 0.0007271 \cos 2\varphi - 0.0000018 \cos 4\varphi$$

Table IV, for finding the latitude from an observed altitude of Polaris, is constructed for—

(1) An altitude of Polaris equal to 45°.

(2) A declination of Polaris equal to + 88° 44′.

The principal computations of the Ephemeris have been distributed in the following manner:—

The ephemeris of the Sun was computed by the late Mr. **Eastwood**; the Moon's longitude, latitude, semidiameter and horizontal parallax, by Professor **Keith**; the right ascension and declination, by Professor **Van Vleck**; the culminations, by Mr. **Meier**; the lunar distances, by Mr. **Bradford**; Mercury and Venus, by Mr. **E. P. Austin**; Mars, Jupiter, Saturn, Uranus, and Neptune, by Mr. **Roberdeau Buchanan**; Jupiter's satellites, by Professor **H. D. Todd**; the satellites of Mars, Saturn, Uranus, and Neptune, by Dr. **Morrison**. The mean and apparent places of the fixed stars were prepared by Mr. **English** and Mr. **Hedrick**; the general constants for their reduction, by Mr. **Buchanan**; the occultations, by Mr. **J. O. Wiessner** and Mr. **Auhagen**; and the eclipses were computed and the charts projected by Mr. **Buchanan**.

TABLE I.

CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING TO A CORRECTED LUNAR DISTANCE.

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris.																									
		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
0 20	2 40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
0 30	2 30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9
0 40	2 20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	10	11	11
0 50	2 10	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13
1 0	2 0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	14	14
1 10	1 50	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15	16
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16

		Difference of the Proportional Logarithms in the Ephemeris.																							
		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7
0 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12
0 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17	17
0 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	22
0 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	25
1 0	2 0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31

		Difference of the Proportional Logarithms in the Ephemeris.																		
		102	104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9	9
0 20	2 40	13	13	13	13	14	14	14	14	15	15	15	15	15	16	16	16	16	17	17
0 30	2 30	18	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	24	24
0 40	2 20	22	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	29	30
0 50	2 10	26	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	34	34
1 0	2 0	28	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	38	38
1 10	1 50	30	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	40	40	41
1 20	1 40	31	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42	42
1 30	1 30	32	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42	43

The correction is to be added to the approximate Greenwich time when the proportional logarithms in the Ephemeris are decreasing, and subtracted when they are increasing.

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Side-real.	$0^{h.}$	$1^{h.}$	$2^{h.}$	$3^{h.}$	$4^{h.}$	$5^{h.}$	$6^{h.}$	$7^{h.}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.830	0 19.659	0 29.489	0 39.318	0 49.148	0 58.977	1 8.807	0	0.000
1	0 0.164	0 9.993	0 19.823	0 29.653	0 39.482	0 49.312	0 59.141	1 8.971	1	0.003
2	0 0.328	0 10.157	0 19.987	0 29.816	0 39.646	0 49.475	0 59.305	1 9.135	2	0.005
3	0 0.491	0 10.321	0 20.151	0 29.980	0 39.810	0 49.639	0 59.469	1 9.298	3	0.008
4	0 0.655	0 10.485	0 20.314	0 30.144	0 39.974	0 49.803	0 59.633	1 9.462	4	0.011
5	0 0.819	0 10.649	0 20.478	0 30.308	0 40.137	0 49.967	0 59.796	1 9.626	5	0.014
6	0 0.983	0 10.813	0 20.642	0 30.472	0 40.301	0 50.131	0 59.960	1 9.790	6	0.016
7	0 1.147	0 10.976	0 20.806	0 30.635	0 40.465	0 50.295	1 0.124	1 9.954	7	0.019
8	0 1.311	0 11.140	0 20.970	0 30.799	0 40.629	0 50.458	1 0.288	1 10.118	8	0.022
9	0 1.474	0 11.304	0 21.134	0 30.963	0 40.793	0 50.622	1 0.452	1 10.281	9	0.025
10	0 1.638	0 11.468	0 21.297	0 31.127	0 40.956	0 50.786	1 0.616	1 10.445	10	0.027
11	0 1.802	0 11.632	0 21.461	0 31.291	0 41.120	0 50.950	1 0.779	1 10.609	11	0.030
12	0 1.966	0 11.795	0 21.625	0 31.455	0 41.284	0 51.114	1 0.943	1 10.773	12	0.033
13	0 2.130	0 11.959	0 21.789	0 31.618	0 41.448	0 51.278	1 1.107	1 10.937	13	0.035
14	0 2.294	0 12.123	0 21.953	0 31.782	0 41.612	0 51.441	1 1.271	1 11.100	14	0.038
15	0 2.457	0 12.287	0 22.117	0 31.946	0 41.776	0 51.605	1 1.435	1 11.264	15	0.041
16	0 2.621	0 12.451	0 22.280	0 32.110	0 41.939	0 51.769	1 1.599	1 11.428	16	0.044
17	0 2.785	0 12.615	0 22.444	0 32.274	0 42.103	0 51.933	1 1.762	1 11.592	17	0.046
18	0 2.949	0 12.778	0 22.608	0 32.438	0 42.267	0 52.097	1 1.926	1 11.756	18	0.049
19	0 3.113	0 12.942	0 22.772	0 32.601	0 42.431	0 52.260	1 2.090	1 11.920	19	0.052
20	0 3.277	0 13.106	0 22.936	0 32.765	0 42.595	0 52.424	1 2.254	1 12.083	20	0.055
21	0 3.440	0 13.270	0 23.099	0 32.929	0 42.759	0 52.588	1 2.418	1 12.247	21	0.057
22	0 3.604	0 13.434	0 23.263	0 33.093	0 42.922	0 52.752	1 2.582	1 12.411	22	0.060
23	0 3.768	0 13.598	0 23.427	0 33.257	0 43.086	0 52.916	1 2.745	1 12.575	23	0.063
24	0 3.932	0 13.761	0 23.591	0 33.420	0 43.250	0 53.080	1 2.909	1 12.739	24	0.066
25	0 4.096	0 13.925	0 23.755	0 33.584	0 43.414	0 53.243	1 3.073	1 12.903	25	0.068
26	0 4.259	0 14.089	0 23.919	0 33.748	0 43.578	0 53.407	1 3.237	1 13.066	26	0.071
27	0 4.423	0 14.253	0 24.082	0 33.912	0 43.742	0 53.571	1 3.401	1 13.230	27	0.074
28	0 4.587	0 14.417	0 24.246	0 34.076	0 43.905	0 53.735	1 3.564	1 13.394	28	0.076
29	0 4.751	0 14.581	0 24.410	0 34.240	0 44.069	0 53.899	1 3.728	1 13.558	29	0.079
30	0 4.915	0 14.744	0 24.574	0 34.403	0 44.233	0 54.063	1 3.892	1 13.722	30	0.082
31	0 5.079	0 14.908	0 24.738	0 34.567	0 44.397	0 54.226	1 4.056	1 13.886	31	0.085
32	0 5.242	0 15.072	0 24.902	0 34.731	0 44.561	0 54.390	1 4.220	1 14.049	32	0.087
33	0 5.406	0 15.236	0 25.065	0 34.895	0 44.724	0 54.554	1 4.384	1 14.213	33	0.090
34	0 5.570	0 15.400	0 25.229	0 35.059	0 44.888	0 54 718	1 4.547	1 14.377	34	0.093
35	0 5.734	0 15.563	0 25.393	0 35.223	0 45.052	0 54.882	1 4.711	1 14.541	35	0.096
36	0 5.898	0 15.727	0 25.557	0 35.386	0 45.216	0 55.046	1 4.875	1 14.705	36	0.098
37	0 6.062	0 15.891	0 25.721	0 35.550	0 45.380	0 55.209	1 5.039	1 14.868	37	0.101
38	0 6.225	0 16.055	0 25.885	0 35.714	0 45.544	0 55.373	1 5.203	1 15.032	38	0.104
39	0 6.389	0 16.219	0 26.048	0 35.878	0 45.707	0 55.537	1 5.367	1 15.196	39	0.106
40	0 6.553	0 16.383	0 26.212	0 36.042	0 45.871	0 55.701	1 5.530	1 15.360	40	0.109
41	0 6.717	0 16.546	0 26.376	0 36.206	0 46.035	0 55.865	1 5.694	1 15.524	41	0.112
42	0 6.881	0 16.710	0 26.540	0 36.369	0 46.199	0 56.028	1 5.858	1 15.688	42	0.115
43	0 7.045	0 16.874	0 26.704	0 36.533	0 46.363	0 56.192	1 6.022	1 15.851	43	0.117
44	0 7.208	0 17.038	0 26.867	0 36.697	0 46.527	0 56.356	1 6.186	1 16.015	44	0.120
45	0 7.372	0 17.202	0 27.031	0 36.861	0 46.690	0 56.520	1 6.350	1 16.179	45	0.123
46	0 7.536	0 17.366	0 27.195	0 37.025	0 46.854	0 56.684	1 6.513	1 16.343	46	0.126
47	0 7.700	0 17.529	0 27.359	0 37.188	0 47.018	0 56.848	1 6.677	1 16.507	47	0.128
48	0 7.864	0 17.693	0 27.523	0 37.352	0 47.182	0 57.011	1 6.841	1 16.671	48	0.131
49	0 8.027	0 17.857	0 27.687	0 37.516	0 47.346	0 57.175	1 7.005	1 16.834	49	0.134
50	0 8.191	0 18.021	0 27.850	0 37.680	0 47.510	0 57.339	1 7.169	1 16.998	50	0.137
51	0 8.355	0 18.185	0 28.014	0 37.844	0 47.673	0 57.503	1 7.332	1 17.162	51	0.139
52	0 8.519	0 18.349	0 28.178	0 38.008	0 47.837	0 57.667	1 7.496	1 17.326	52	0.142
53	0 8.683	0 18.512	0 28.342	0 38.171	0 48.001	0 57.831	1 7.660	1 17.490	53	0.145
54	0 8.847	0 18.676	0 28.506	0 38.335	0 48.165	0 57.994	1 7.824	1 17.654	54	0.147
55	0 9.010	0 18.840	0 28.670	0 38.499	0 48.329	0 58.158	1 7.988	1 17.817	55	0.150
56	0 9.174	0 19.004	0 28.833	0 38.663	0 48.492	0 58.322	1 8.152	1 17.981	56	0.153
57	0 9.338	0 19.168	0 28.997	0 38.827	0 48.656	0 58.486	1 8.315	1 18.145	57	0.156
58	0 9.502	0 19.331	0 29.161	0 38.991	0 48.820	0 58.650	1 8.479	1 18.309	58	0.158
59	0 9.666	0 19.495	0 29.325	0 39.154	0 48.984	0 58.814	1 8.643	1 18.473	59	0.161
Side-real.	$0^{h.}$	$1^{h.}$	$2^{h.}$	$3^{h.}$	$4^{h.}$	$5^{h.}$	$6^{h.}$	$7^{h.}$	For Seconds.	

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	$8^{h.}$	$9^{h.}$	$10^{h.}$	$11^{h.}$	$12^{h.}$	$13^{h.}$	$14^{h.}$	$15^{h.}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	1 18.636	1 28.466	1 38.296	1 48.125	1 57.955	2 7.784	2 17.614	2 27.443	0	0.000
1	1 18.800	1 28.630	1 38.459	1 48.289	1 58.119	2 7.948	2 17.778	2 27.607	1	0.003
2	1 18.964	1 28.794	1 38.623	1 48.453	1 58.282	2 8.112	2 17.941	2 27.771	2	0.005
3	1 19.128	1 28.958	1 38.787	1 48.617	1 58.446	2 8.276	2 18.105	2 27.935	3	0.008
4	1 19.292	1 29.121	1 38.951	1 48.780	1 58.610	2 8.440	2 18.269	2 28.099	4	0.011
5	1 19.456	1 29.285	1 39.115	1 48.944	1 58.774	2 8.603	2 18.433	2 28.263	5	0.014
6	1 19.619	1 29.449	1 39.279	1 49.108	1 58.938	2 8.767	2 18.597	2 28.426	6	0.016
7	1 19.783	1 29.613	1 39.442	1 49.272	1 59.101	2 8.931	2 18.761	2 28.590	7	0.019
8	1 19.947	1 29.777	1 39.606	1 49.436	1 59.265	2 9.095	2 18.924	2 28.754	8	0.022
9	1 20.111	1 29.940	1 39.770	1 49.600	1 59.429	2 9.259	2 19.088	2 28.918	9	0.025
10	1 20.275	1 30.104	1 39.934	1 49.763	1 59.593	2 9.423	2 19.252	2 29.082	10	0.027
11	1 20.439	1 30.268	1 40.098	1 49.927	1 59.757	2 9.586	2 19.416	2 29.245	11	0.030
12	1 20.602	1 30.432	1 40.261	1 50.091	1 59.921	2 9.750	2 19.580	2 29.409	12	0.033
13	1 20.766	1 30.596	1 40.425	1 50.255	2 0.084	2 9.914	2 19.744	2 29.573	13	0.035
14	1 20.930	1 30.760	1 40.589	1 50.419	2 0.248	2 10.078	2 19.907	2 29.737	14	0.038
15	1 21.094	1 30.923	1 40.753	1 50.583	2 0.412	2 10.242	2 20.071	2 29.901	15	0.041
16	1 21.258	1 31.087	1 40.917	1 50.746	2 0.576	2 10.405	2 20.235	2 30.065	16	0.044
17	1 21.422	1 31.251	1 41.081	1 50.910	2 0.740	2 10.569	2 20.399	2 30.228	17	0.046
18	1 21.585	1 31.415	1 41.244	1 51.074	2 0.904	2 10.733	2 20.563	2 30.392	18	0.049
19	1 21.749	1 31.579	1 41.408	1 51.238	2 1.067	2 10.897	2 20.727	2 30.556	19	0.052
20	1 21.913	1 31.743	1 41.572	1 51.402	2 1.231	2 11.061	2 20.890	2 30.720	20	0.055
21	1 22.077	1 31.906	1 41.736	1 51.565	2 1.395	2 11.225	2 21.054	2 30.884	21	0.057
22	1 22.241	1 32.070	1 41.900	1 51.729	2 1.559	2 11.388	2 21.218	2 31.048	22	0.060
23	1 22.404	1 32.234	1 42.064	1 51.893	2 1.723	2 11.552	2 21.382	2 31.211	23	0.063
24	1 22.568	1 32.398	1 42.227	1 52.057	2 1.887	2 11.716	2 21.546	2 31.375	24	0.066
25	1 22.732	1 32.562	1 42.391	1 52.221	2 2.050	2 11.880	2 21.709	2 31.539	25	0.068
26	1 22.896	1 32.726	1 42.555	1 52.385	2 2.214	2 12.044	2 21.873	2 31.703	26	0.071
27	1 23.060	1 32.889	1 42.719	1 52.548	2 2.378	2 12.208	2 22.037	2 31.867	27	0.074
28	1 23.224	1 33.053	1 42.883	1 52.712	2 2.542	2 12.371	2 22.201	2 32.031	28	0.076
29	1 23.387	1 33.217	1 43.047	1 52.876	2 2.706	2 12.535	2 22.365	2 32.194	29	0.079
30	1 23.551	1 33.381	1 43.210	1 53.040	2 2.869	2 12.699	2 22.529	2 32.358	30	0.082
31	1 23.715	1 33.545	1 43.374	1 53.204	2 3.033	2 12.863	2 22.692	2 32.522	31	0.085
32	1 23.879	1 33.708	1 43.538	1 53.368	2 3.197	2 13.027	2 22.856	2 32.686	32	0.087
33	1 24.043	1 33.872	1 43.702	1 53.531	2 3.361	2 13.191	2 23.020	2 32.850	33	0.090
34	1 24.207	1 34.036	1 43.866	1 53.695	2 3.525	2 13.354	2 23.184	2 33.013	34	0.093
35	1 24.370	1 34.200	1 44.029	1 53.859	2 3.689	2 13.518	2 23.348	2 33.177	35	0.096
36	1 24.534	1 34.364	1 44.193	1 54.023	2 3.852	2 13.682	2 23.512	2 33.341	36	0.098
37	1 24.698	1 34.528	1 44.357	1 54.187	2 4.016	2 13.846	2 23.675	2 33.505	37	0.101
38	1 24.862	1 34.691	1 44.521	1 54.351	2 4.180	2 14.010	2 23.839	2 33.669	38	0.104
39	1 25.026	1 34.855	1 44.685	1 54.514	2 4.344	2 14.173	2 24.003	2 33.833	39	0.106
40	1 25.190	1 35.019	1 44.849	1 54.678	2 4.508	2 14.337	2 24.167	2 33.996	40	0.109
41	1 25.353	1 35.183	1 45.012	1 54.842	2 4.672	2 14.501	2 24.331	2 34.160	41	0.112
42	1 25.517	1 35.347	1 45.176	1 55.006	2 4.835	2 14.665	2 24.495	2 34.324	42	0.115
43	1 25.681	1 35.511	1 45.340	1 55.170	2 4.999	2 14.829	2 24.658	2 34.488	43	0.117
44	1 25.845	1 35.674	1 45.504	1 55.333	2 5.163	2 14.993	2 24.822	2 34.652	44	0.120
45	1 26.009	1 35.838	1 45.668	1 55.497	2 5.327	2 15.156	2 24.986	2 34.816	45	0.123
46	1 26.172	1 36.002	1 45.832	1 55.661	2 5.491	2 15.320	2 25.150	2 34.979	46	0.126
47	1 26.336	1 36.166	1 45.995	1 55.825	2 5.655	2 15.484	2 25.314	2 35.143	47	0.128
48	1 26.500	1 36.330	1 46.159	1 55.989	2 5.818	2 15.648	2 25.477	2 35.307	48	0.131
49	1 26.664	1 36.493	1 46.323	1 56.153	2 5.982	2 15.812	2 25.641	2 35.471	49	0.134
50	1 26.828	1 36.657	1 46.487	1 56.316	2 6.146	2 15.976	2 25.805	2 35.635	50	0.137
51	1 26.992	1 36.821	1 46.651	1 56.480	2 6.310	2 16.139	2 25.969	2 35.798	51	0.139
52	1 27.155	1 36.985	1 46.815	1 56.644	2 6.474	2 16.303	2 26.133	2 35.962	52	0.142
53	1 27.319	1 37.149	1 46.978	1 56.808	2 6.637	2 16.467	2 26.297	2 36.126	53	0.145
54	1 27.483	1 37.313	1 47.142	1 56.972	2 6.801	2 16.631	2 26.460	2 36.290	54	0.147
55	1 27.647	1 37.476	1 47.306	1 57.136	2 6.965	2 16.795	2 26.624	2 36.454	55	0.150
56	1 27.811	1 37.640	1 47.470	1 57.299	2 7.129	2 16.959	2 26.788	2 36.618	56	0.153
57	1 27.975	1 37.804	1 47.634	1 57.463	2 7.293	2 17.122	2 26.952	2 36.781	57	0.156
58	1 28.138	1 37.968	1 47.797	1 57.627	2 7.457	2 17.286	2 27.116	2 36.945	58	0.158
59	1 28.302	1 38.132	1 47.961	1 57.791	2 7.620	2 17.450	2 27.280	2 37.109	59	0.161
Sidereal.	$8^{h.}$	$9^{h.}$	$10^{h.}$	$11^{h.}$	$12^{h.}$	$13^{h.}$	$14^{h.}$	$15^{h.}$	For Seconds.	

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Side-real.	16$^{h.}$	17$^{h.}$	18$^{h.}$	19$^{h.}$	20$^{h.}$	21$^{h.}$	22$^{h.}$	23$^{h.}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.273	2 47.102	2 56.932	3 6.762	3 16.591	3 26.421	3 36.250	3 46.080	0	0.000
1	2 37.437	2 47.266	2 57.096	3 6.925	3 16.755	3 26.585	3 36.414	3 46.244	1	0.003
2	2 37.601	2 47.430	2 57.260	3 7.089	3 16.919	3 26.748	3 36.578	3 46.407	2	0.005
3	2 37.764	2 47.594	2 57.424	3 7.253	3 17.083	3 26.912	3 36.742	3 46.571	3	0.008
4	2 37.928	2 47.758	2 57.587	3 7.417	3 17.246	3 27.076	3 36.906	3 46.735	4	0.011
5	2 38.092	2 47.922	2 57.751	3 7.581	3 17.410	3 27.240	3 37.069	3 46.899	5	0.014
6	2 38.256	2 48.085	2 57.915	3 7.745	3 17.574	3 27.404	3 37.233	3 47.063	6	0.016
7	2 38.420	2 48.249	2 58.079	3 7.908	3 17.738	3 27.568	3 37.397	3 47.227	7	0.019
8	2 38.584	2 48.413	2 58.243	3 8.072	3 17.902	3 27.731	3 37.561	3 47.390	8	0.022
9	2 38.747	2 48.577	2 58.406	3 8.236	3 18.066	3 27.895	3 37.725	3 47.554	9	0.025
10	2 38.911	2 48.741	2 58.570	3 8.400	3 18.229	3 28.059	3 37.889	3 47.718	10	0.027
11	2 39.075	2 48.905	2 58.734	3 8.564	3 18.393	3 28.223	3 38.052	3 47.882	11	0.030
12	2 39.239	2 49.068	2 58.898	3 8.728	3 18.557	3 28.387	3 38.216	3 48.046	12	0.033
13	2 39.403	2 49.232	2 59.062	3 8.891	3 18.721	3 28.550	3 38.380	3 48.210	13	0.035
14	2 39.566	2 49.396	2 59.226	3 9.055	3 18.885	3 28.714	3 38.544	3 48.373	14	0.038
15	2 39.730	2 49.560	2 59.389	3 9.219	3 19.049	3 28.878	3 38.708	3 48.537	15	0.041
16	2 39.894	2 49.724	2 59.553	3 9.383	3 19.212	3 29.042	3 38.871	3 48.701	16	0.044
17	2 40.058	2 49.888	2 59.717	3 9.547	3 19.376	3 29.206	3 39.035	3 48.865	17	0.046
18	2 40.222	2 50.051	2 59.881	3 9.710	3 19.540	3 29.370	3 39.199	3 49.029	18	0.049
19	2 40.386	2 50.215	3 0.045	3 9.874	3 19.704	3 29.533	3 39.363	3 49.193	19	0.052
20	2 40.549	2 50.379	3 0.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	20	0.055
21	2 40.713	2 50.543	3 0.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	21	0.057
22	2 40.877	2 50.707	3 0.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	22	0.060
23	2 41.041	2 50.870	3 0.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	23	0.063
24	2 41.205	2 51.034	3 0.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	24	0.066
25	2 41.369	2 51.198	3 1.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	25	0.068
26	2 41.532	2 51.362	3 1.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	26	0.071
27	2 41.696	2 51.526	3 1.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	27	0.074
28	2 41.860	2 51.690	3 1.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	28	0.076
29	2 42.024	2 51.853	3 1.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	29	0.079
30	2 42.188	2 52.017	3 1.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	30	0.082
31	2 42.352	2 52.181	3 2.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	31	0.085
32	2 42.515	2 52.345	3 2.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	32	0.087
33	2 42.679	2 52.509	3 2.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	33	0.090
34	2 42.843	2 52.673	3 2.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	34	0.093
35	2 43.007	2 52.836	3 2.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	35	0.096
36	2 43.171	2 53.000	3 2.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	36	0.098
37	2 43.334	2 53.164	3 2.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	37	0.101
38	2 43.498	2 53.328	3 3.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	38	0.104
39	2 43.662	2 53.492	3 3.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	39	0.106
40	2 43.826	2 53.656	3 3.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	40	0.109
41	2 43.990	2 53.819	3 3.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	41	0.112
42	2 44.154	2 53.983	3 3.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	42	0.115
43	2 44.317	2 54.147	3 3.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	43	0.117
44	2 44.481	2 54.311	3 4.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	44	0.120
45	2 44.645	2 54.475	3 4.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	45	0.123
46	2 44.809	2 54.638	3 4.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	46	0.126
47	2 44.973	2 54.802	3 4.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	47	0.128
48	2 45.137	2 54.966	3 4.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	48	0.131
49	2 45.300	2 55.130	3 4.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	49	0.134
50	2 45.464	2 55.294	3 5.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	50	0.137
51	2 45.628	2 55.458	3 5.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	51	0.139
52	2 45.792	2 55.621	3 5.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	52	0.142
53	2 45.956	2 55.785	3 5.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	53	0.145
54	2 46.120	2 55.949	3 5.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	54	0.147
55	2 46.283	2 56.113	3 5.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	55	0.150
56	2 46.447	2 56.277	3 6.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	56	0.153
57	2 46.611	2 56.441	3 6.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	57	0.156
58	2 46.775	2 56.604	3 6.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	58	0.158
59	2 46.939	2 56.768	3 6.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	59	0.161
Side-real.	16$^{h.}$	17$^{h.}$	18$^{h.}$	19$^{h.}$	20$^{h.}$	21$^{h.}$	22$^{h.}$	23$^{h.}$	For Seconds.	

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	$0^{\text{h.}}$	$1^{\text{h.}}$	$2^{\text{h.}}$	$3^{\text{h.}}$	$4^{\text{h.}}$	$5^{\text{h.}}$	$6^{\text{h.}}$	$7^{\text{h.}}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.856	0 19.713	0 29.569	0 39.426	0 49.282	0 59.139	1 8.995	0	0.000
1	0 0.164	0 10.021	0 19.877	0 29.734	0 39.590	0 49.447	0 59.303	1 9.160	1	0.003
2	0 0.329	0 10.185	0 20.041	0 29.898	0 39.754	0 49.611	0 59.467	1 9.324	2	0.005
3	0 0.493	0 10.349	0 20.206	0 30.062	0 39.919	0 49.775	0 59.632	1 9.488	3	0.008
4	0 0.657	0 10.514	0 20.370	0 30.227	0 40.083	0 49.939	0 59.796	1 9.652	4	0.011
5	0 0.821	0 10.678	0 20.534	0 30.391	0 40.247	0 50.104	0 59.960	1 9.817	5	0.014
6	0 0.986	0 10.842	0 20.699	0 30.555	0 40.412	0 50.268	1 0.124	1 9.981	6	0.016
7	0 1.150	0 11.006	0 20.863	0 30.719	0 40.576	0 50.432	1 0.289	1 10.145	7	0.019
8	0 1.314	0 11.171	0 21.027	0 30.884	0 40.740	0 50.597	1 0.453	1 10.310	8	0.022
9	0 1.478	0 11.335	0 21.191	0 31.048	0 40.904	0 50.761	1 0.617	1 10.474	9	0.025
10	0 1.643	0 11.499	0 21.356	0 31.212	0 41.069	0 50.925	1 0.782	1 10.638	10	0.027
11	0 1.807	0 11.663	0 21.520	0 31.376	0 41.233	0 51.089	1 0.946	1 10.802	11	0.030
12	0 1.971	0 11.828	0 21.684	0 31.541	0 41.397	0 51.254	1 1.110	1 10.967	12	0.033
13	0 2.136	0 11.992	0 21.849	0 31.705	0 41.561	0 51.418	1 1.274	1 11.131	13	0.036
14	0 2.300	0 12.156	0 22.013	0 31.869	0 41.726	0 51.582	1 1.439	1 11.295	14	0.038
15	0 2.464	0 12.321	0 22.177	0 32.034	0 41.890	0 51.746	1 1.603	1 11.459	15	0.041
16	0 2.628	0 12.485	0 22.341	0 32.198	0 42.054	0 51.911	1 1.767	1 11.624	16	0.044
17	0 2.793	0 12.649	0 22.506	0 32.362	0 42.219	0 52.075	1 1.932	1 11.788	17	0.047
18	0 2.957	0 12.813	0 22.670	0 32.526	0 42.383	0 52.239	1 2.096	1 11.952	18	0.049
19	0 3.121	0 12.978	0 22.834	0 32.691	0 42.547	0 52.404	1 2.260	1 12.117	19	0.052
20	0 3.285	0 13.142	0 22.998	0 32.855	0 42.711	0 52.568	1 2.424	1 12.281	20	0.055
21	0 3.450	0 13.306	0 23.163	0 33.019	0 42.876	0 52.732	1 2.589	1 12.445	21	0.057
22	0 3.614	0 13.471	0 23.327	0 33.183	0 43.040	0 52.896	1 2.753	1 12.609	22	0.060
23	0 3.778	0 13.635	0 23.491	0 33.348	0 43.204	0 53.061	1 2.917	1 12.774	23	0.063
24	0 3.943	0 13.799	0 23.656	0 33.512	0 43.368	0 53.225	1 3.081	1 12.938	24	0.066
25	0 4.107	0 13.963	0 23.820	0 33.676	0 43.533	0 53.389	1 3.246	1 13.102	25	0.068
26	0 4.271	0 14.128	0 23.984	0 33.841	0 43.697	0 53.554	1 3.410	1 13.266	26	0.071
27	0 4.435	0 14.292	0 24.148	0 34.005	0 43.861	0 53.718	1 3.574	1 13.431	27	0.074
28	0 4.600	0 14.456	0 24.313	0 34.169	0 44.026	0 53.882	1 3.739	1 13.595	28	0.077
29	0 4.764	0 14.620	0 24.477	0 34.333	0 44.190	0 54.046	1 3.903	1 13.759	29	0.079
30	0 4.928	0 14.785	0 24.641	0 34.498	0 44.354	0 54.211	1 4.067	1 13.924	30	0.082
31	0 5.093	0 14.949	0 24.805	0 34.662	0 44.518	0 54.375	1 4.231	1 14.088	31	0.085
32	0 5.257	0 15.113	0 24.970	0 34.826	0 44.683	0 54.539	1 4.396	1 14.252	32	0.088
33	0 5.421	0 15.278	0 25.134	0 34.990	0 44.847	0 54.703	1 4.560	1 14.416	33	0.090
34	0 5.585	0 15.442	0 25.298	0 35.155	0 45.011	0 54.868	1 4.724	1 14.581	34	0.093
35	0 5.750	0 15.606	0 25.463	0 35.319	0 45.176	0 55.032	1 4.888	1 14.745	35	0.096
36	0 5.914	0 15.770	0 25.627	0 35.483	0 45.340	0 55.196	1 5.053	1 14.909	36	0.099
37	0 6.078	0 15.935	0 25.791	0 35.648	0 45.504	0 55.361	1 5.217	1 15.073	37	0.101
38	0 6.242	0 16.099	0 25.955	0 35.812	0 45.668	0 55.525	1 5.381	1 15.238	38	0.104
39	0 6.407	0 16.263	0 26.120	0 35.976	0 45.833	0 55.689	1 5.546	1 15.402	39	0.107
40	0 6.571	0 16.427	0 26.284	0 36.140	0 45.997	0 55.853	1 5.710	1 15.566	40	0.110
41	0 6.735	0 16.592	0 26.448	0 36.305	0 46.161	0 56.018	1 5.874	1 15.731	41	0.112
42	0 6.900	0 16.756	0 26.612	0 36.469	0 46.325	0 56.182	1 6.038	1 15.895	42	0.115
43	0 7.064	0 16.920	0 26.777	0 36.633	0 46.490	0 56.346	1 6.203	1 16.059	43	0.118
44	0 7.228	0 17.085	0 26.941	0 36.798	0 46.654	0 56.510	1 6.367	1 16.223	44	0.120
45	0 7.392	0 17.249	0 27.105	0 36.962	0 46.818	0 56.675	1 6.531	1 16.388	45	0.123
46	0 7.557	0 17.413	0 27.270	0 37.126	0 46.983	0 56.839	1 6.695	1 16.552	46	0.126
47	0 7.721	0 17.577	0 27.434	0 37.290	0 47.147	0 57.003	1 6.860	1 16.716	47	0.129
48	0 7.885	0 17.742	0 27.598	0 37.455	0 47.311	0 57.168	1 7.024	1 16.881	48	0.131
49	0 8.049	0 17.906	0 27.762	0 37.619	0 47.475	0 57.332	1 7.188	1 17.045	49	0.134
50	0 8.214	0 18.070	0 27.927	0 37.783	0 47.640	0 57.496	1 7.353	1 17.209	50	0.137
51	0 8.378	0 18.234	0 28.091	0 37.947	0 47.804	0 57.660	1 7.517	1 17.373	51	0.140
52	0 8.542	0 18.399	0 28.255	0 38.112	0 47.968	0 57.825	1 7.681	1 17.538	52	0.142
53	0 8.707	0 18.563	0 28.420	0 38.276	0 48.132	0 57.989	1 7.845	1 17.702	53	0.145
54	0 8.871	0 18.727	0 28.584	0 38.440	0 48.297	0 58.153	1 8.010	1 17.866	54	0.148
55	0 9.035	0 18.892	0 28.748	0 38.605	0 48.461	0 58.317	1 8.174	1 18.030	55	0.151
56	0 9.199	0 19.056	0 28.912	0 38.769	0 48.625	0 58.482	1 8.338	1 18.195	56	0.153
57	0 9.364	0 19.220	0 29.077	0 38.933	0 48.790	0 58.646	1 8.502	1 18.359	57	0.156
58	0 9.528	0 19.384	0 29.241	0 39.097	0 48.954	0 58.810	1 8.667	1 18.523	58	0.159
59	0 9.692	0 19.549	0 29.405	0 39.262	0 49.118	0 58.975	1 8.831	1 18.688	59	0.162
Mean Solar.	$0^{\text{h.}}$	$1^{\text{h.}}$	$2^{\text{h.}}$	$3^{\text{h.}}$	$4^{\text{h.}}$	$5^{\text{h.}}$	$6^{\text{h.}}$	$7^{\text{h.}}$	For Seconds.	

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	1 18.852	1 28.708	1 38.565	1 48.421	1 58.278	2 8.134	2 17.991	2 27.847	0	0.000
1	1 19.016	1 28.873	1 38.729	1 48.585	1 58.442	2 8.298	2 18.155	2 28.011	1	0.003
2	1 19.180	1 29.037	1 38.893	1 48.750	1 58.606	2 8.463	2 18.319	2 28.176	2	0.005
3	1 19.345	1 29.201	1 39.058	1 48.914	1 58.771	2 8.627	2 18.483	2 28.340	3	0.008
4	1 19.509	1 29.365	1 39.222	1 49.078	1 58.935	2 8.791	2 18.648	2 28.504	4	0.011
5	1 19.673	1 29.530	1 39.386	1 49.243	1 59.099	2 8.956	2 18.812	2 28.668	5	0.014
6	1 19.837	1 29.694	1 39.550	1 49.407	1 59.263	2 9.120	2 18.976	2 28.833	6	0.016
7	1 20.002	1 29.858	1 39.715	1 49.571	1 59.428	2 9.284	2 19.141	2 28.997	7	0.019
8	1 20.166	1 30.022	1 39.879	1 49.735	1 59.592	2 9.448	2 19.305	2 29.161	8	0.022
9	1 20.330	1 30.187	1 40.043	1 49.900	1 59.756	2 9.613	2 19.469	2 29.326	9	0.025
10	1 20.495	1 30.351	1 40.207	1 50.064	1 59.920	2 9.777	2 19.633	2 29.490	10	0.027
11	1 20.659	1 30.515	1 40.372	1 50.228	2 0.085	2 9.941	2 19.798	2 29.654	11	0.030
12	1 20.823	1 30.680	1 40.536	1 50.393	2 0.249	2 10.105	2 19.962	2 29.818	12	0.033
13	1 20.987	1 30.844	1 40.700	1 50.557	2 0.413	2 10.270	2 20.126	2 29.983	13	0.036
14	1 21.152	1 31.008	1 40.865	1 50.721	2 0.578	2 10.434	2 20.290	2 30.147	14	0.038
15	1 21.316	1 31.172	1 41.029	1 50.885	2 0.742	2 10.598	2 20.455	2 30.311	15	0.041
16	1 21.480	1 31.337	1 41.193	1 51.050	2 0.906	2 10.763	2 20.619	2 30.476	16	0.044
17	1 21.644	1 31.501	1 41.357	1 51.214	2 1.070	2 10.927	2 20.783	2 30.640	17	0.047
18	1 21.809	1 31.665	1 41.522	1 51.378	2 1.235	2 11.091	2 20.948	2 30.804	18	0.049
19	1 21.973	1 31.829	1 41.686	1 51.542	2 1.399	2 11.255	2 21.112	2 30.968	19	0.052
20	1 22.137	1 31.994	1 41.850	1 51.707	2 1.563	2 11.420	2 21.276	2 31.133	20	0.055
21	1 22.302	1 32.158	1 42.015	1 51.871	2 1.727	2 11.584	2 21.440	2 31.297	21	0.057
22	1 22.466	1 32.322	1 42.179	1 52.035	2 1.892	2 11.748	2 21.605	2 31.461	22	0.060
23	1 22.630	1 32.487	1 42.343	1 52.200	2 2.056	2 11.912	2 21.769	2 31.625	23	0.063
24	1 22.794	1 32.651	1 42.507	1 52.364	2 2.220	2 12.077	2 21.933	2 31.790	24	0.066
25	1 22.959	1 32.815	1 42.672	1 52.528	2 2.385	2 12.241	2 22.098	2 31.954	25	0.068
26	1 23.123	1 32.979	1 42.836	1 52.692	2 2.549	2 12.405	2 22.262	2 32.118	26	0.071
27	1 23.287	1 33.144	1 43.000	1 52.857	2 2.713	2 12.570	2 22.426	2 32.283	27	0.074
28	1 23.451	1 33.308	1 43.164	1 53.021	2 2.877	2 12.734	2 22.590	2 32.447	28	0.077
29	1 23.616	1 33.472	1 43.329	1 53.185	2 3.042	2 12.898	2 22.755	2 32.611	29	0.079
30	1 23.780	1 33.637	1 43.493	1 53.349	2 3.206	2 13.062	2 22.919	2 32.775	30	0.082
31	1 23.944	1 33.801	1 43.657	1 53.514	2 3.370	2 13.227	2 23.083	2 32.940	31	0.085
32	1 24.109	1 33.965	1 43.822	1 53.678	2 3.534	2 13.391	2 23.247	2 33.104	32	0.088
33	1 24.273	1 34.129	1 43.986	1 53.842	2 3.699	2 13.555	2 23.412	2 33.268	33	0.090
34	1 24.437	1 34.294	1 44.150	1 54.007	2 3.863	2 13.720	2 23.576	2 33.432	34	0.093
35	1 24.601	1 34.458	1 44.314	1 54.171	2 4.027	2 13.884	2 23.740	2 33.597	35	0.096
36	1 24.766	1 34.622	1 44.479	1 54.335	2 4.192	2 14.048	2 23.905	2 33.761	36	0.099
37	1 24.930	1 34.786	1 44.643	1 54.499	2 4.356	2 14.212	2 24.069	2 33.925	37	0.101
38	1 25.094	1 34.951	1 44.807	1 54.664	2 4.520	2 14.377	2 24.233	2 34.090	38	0.104
39	1 25.259	1 35.115	1 44.971	1 54.828	2 4.684	2 14.541	2 24.397	2 34.254	39	0.107
40	1 25.423	1 35.279	1 45.136	1 54.992	2 4.849	2 14.705	2 24.562	2 34.418	40	0.110
41	1 25.587	1 35.444	1 45.300	1 55.156	2 5.013	2 14.869	2 24.726	2 34.582	41	0.112
42	1 25.751	1 35.608	1 45.464	1 55.321	2 5.177	2 15.034	2 24.890	2 34.747	42	0.115
43	1 25.916	1 35.772	1 45.629	1 55.485	2 5.342	2 15.198	2 25.054	2 34.911	43	0.118
44	1 26.080	1 35.936	1 45.793	1 55.649	2 5.506	2 15.362	2 25.219	2 35.075	44	0.120
45	1 26.244	1 36.101	1 45.957	1 55.814	2 5.670	2 15.527	2 25.383	2 35.239	45	0.123
46	1 26.408	1 36.265	1 46.121	1 55.978	2 5.834	2 15.691	2 25.547	2 35.404	46	0.126
47	1 26.573	1 36.429	1 46.286	1 56.142	2 5.999	2 15.855	2 25.712	2 35.568	47	0.129
48	1 26.737	1 36.593	1 46.450	1 56.306	2 6.163	2 16.019	2 25.876	2 35.732	48	0.131
49	1 26.901	1 36.758	1 46.614	1 56.471	2 6.327	2 16.184	2 26.040	2 35.897	49	0.134
50	1 27.066	1 36.922	1 46.778	1 56.635	2 6.491	2 16.348	2 26.204	2 36.061	50	0.137
51	1 27.230	1 37.086	1 46.943	1 56.799	2 6.656	2 16.512	2 26.369	2 36.225	51	0.140
52	1 27.394	1 37.251	1 47.107	1 56.964	2 6.820	2 16.676	2 26.533	2 36.389	52	0.142
53	1 27.558	1 37.415	1 47.271	1 57.128	2 6.984	2 16.841	2 26.697	2 36.554	53	0.145
54	1 27.723	1 37.579	1 47.436	1 57.292	2 7.149	2 17.005	2 26.861	2 36.718	54	0.148
55	1 27.887	1 37.743	1 47.600	1 57.456	2 7.313	2 17.169	2 27.026	2 36.882	55	0.151
56	1 28.051	1 37.908	1 47.764	1 57.621	2 7.477	2 17.334	2 27.190	2 37.047	56	0.153
57	1 28.215	1 38.072	1 47.928	1 57.785	2 7.641	2 17.498	2 27.354	2 37.211	57	0.156
58	1 28.380	1 38.236	1 48.093	1 57.949	2 7.806	2 17.662	2 27.519	2 37.375	58	0.159
59	1 28.544	1 38.400	1 48.257	1 58.113	2 7.970	2 17.826	2 27.683	2 37.539	59	0.162
Mean Solar.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.	For Seconds.	

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	$16^{\text{h.}}$	$17^{\text{h.}}$	$18^{\text{h.}}$	$19^{\text{h.}}$	$20^{\text{h.}}$	$21^{\text{h.}}$	$22^{\text{h.}}$	$23^{\text{h.}}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.704	2 47.560	2 57.417	3 7.273	3 17.129	3 26.986	3 36.842	3 46.699	0	0.000
1	2 37.868	2 47.724	2 57.581	3 7.437	3 17.294	3 27.150	3 37.007	3 46.863	1	0.003
2	2 38.032	2 47.889	2 57.745	3 7.602	3 17.458	3 27.315	3 37.171	3 47.027	2	0.005
3	2 38.196	2 48.053	2 57.909	3 7.766	3 17.622	3 27.479	3 37.335	3 47.192	3	0.008
4	2 38.361	2 48.217	2 58.074	3 7.930	3 17.787	3 27.643	3 37.500	3 47.356	4	0.011
5	2 38.525	2 48.381	2 58.238	3 8.094	3 17.951	3 27.807	3 37.664	3 47.520	5	0.014
6	2 38.689	2 48.546	2 58.402	3 8.259	3 18.115	3 27.972	3 37.828	3 47.685	6	0.016
7	2 38.854	2 48.710	2 58.566	3 8.423	3 18.279	3 28.136	3 37.992	3 47.849	7	0.019
8	2 39.018	2 48.874	2 58.731	3 8.587	3 18.444	3 28.300	3 38.157	3 48.013	8	0.022
9	2 39.182	2 49.039	2 58.895	3 8.751	3 18.608	3 28.464	3 38.321	3 48.177	9	0.025
10	2 39.346	2 49.203	2 59.059	3 8.916	3 18.772	3 28.629	3 38.485	3 48.342	10	0.027
11	2 39.511	2 49.367	2 59.224	3 9.080	3 18.937	3 28.793	3 38.649	3 48.506	11	0.030
12	2 39.675	2 49.531	2 59.388	3 9.244	3 19.101	3 28.957	3 38.814	3 48.670	12	0.033
13	2 39.839	2 49.696	2 59.552	3 9.409	3 19.265	3 29.122	3 38.978	3 48.834	13	0.036
14	2 40.003	2 49.860	2 59.716	3 9.573	3 19.429	3 29.286	3 39.142	3 48.999	14	0.038
15	2 40.168	2 50.024	2 59.881	3 9.737	3 19.594	3 29.450	3 39.307	3 49.163	15	0.041
16	2 40.332	2 50.188	3 0.045	3 9.901	3 19.758	3 29.614	3 39.471	3 49.327	16	0.044
17	2 40.496	2 50.353	3 0.209	3 10.066	3 19.922	3 29.779	3 39.635	3 49.492	17	0.047
18	2 40.661	2 50.517	3 0.373	3 10.230	3 20.086	3 29.943	3 39.799	3 49.656	18	0.049
19	2 40.825	2 50.681	3 0.538	3 10.394	3 20.251	3 30.107	3 39.964	3 49.820	19	0.052
20	2 40.989	2 50.846	3 0.702	3 10.559	3 20.415	3 30.271	3 40.128	3 49.984	20	0.055
21	2 41.153	2 51.010	3 0.866	3 10.723	3 20.579	3 30.436	3 40.292	3 50.149	21	0.057
22	2 41.318	2 51.174	3 1.031	3 10.887	3 20.744	3 30.600	3 40.456	3 50.313	22	0.060
23	2 41.482	2 51.338	3 1.195	3 11.051	3 20.908	3 30.764	3 40.621	3 50.477	23	0.063
24	2 41.646	2 51.503	3 1.359	3 11.216	3 21.072	3 30.929	3 40.785	3 50.642	24	0.066
25	2 41.810	2 51.667	3 1.523	3 11.380	3 21.236	3 31.093	3 40.949	3 50.806	25	0.068
26	2 41.975	2 51.831	3 1.688	3 11.544	3 21.401	3 31.257	3 41.114	3 50.970	26	0.071
27	2 42.139	2 51.995	3 1.852	3 11.708	3 21.565	3 31.421	3 41.278	3 51.134	27	0.074
28	2 42.303	2 52.160	3 2.016	3 11.873	3 21.729	3 31.586	3 41.442	3 51.299	28	0.077
29	2 42.468	2 52.324	3 2.181	3 12.037	3 21.893	3 31.750	3 41.606	3 51.463	29	0.079
30	2 42.632	2 52.488	3 2.345	3 12.201	3 22.058	3 31.914	3 41.771	3 51.627	30	0.082
31	2 42.796	2 52.653	3 2.509	3 12.366	3 22.222	3 32.078	3 41.935	3 51.791	31	0.085
32	2 42.960	2 52.817	3 2.673	3 12.530	3 22.386	3 32.243	3 42.099	3 51.956	32	0.088
33	2 43.125	2 52.981	3 2.838	3 12.694	3 22.551	3 32.407	3 42.264	3 52.120	33	0.090
34	2 43.289	2 53.145	3 3.002	3 12.858	3 22.715	3 32.571	3 42.428	3 52.284	34	0.093
35	2 43.453	2 53.310	3 3.166	3 13.023	3 22.879	3 32.736	3 42.592	3 52.449	35	0.096
36	2 43.617	2 53.474	3 3.330	3 13.187	3 23.043	3 32.900	3 42.756	3 52.613	36	0.099
37	2 43.782	2 53.638	3 3.495	3 13.351	3 23.208	3 33.064	3 42.921	3 52.777	37	0.101
38	2 43.946	2 53.803	3 3.659	3 13.515	3 23.372	3 33.228	3 43.085	3 52.941	38	0.104
39	2 44.110	2 53.967	3 3.823	3 13.680	3 23.536	3 33.393	3 43.249	3 53.106	39	0.107
40	2 44.275	2 54.131	3 3.988	3 13.844	3 23.700	3 33.557	3 43.413	3 53.270	40	0.110
41	2 44.439	2 54.295	3 4.152	3 14.008	3 23.865	3 33.721	3 43.578	3 53.434	41	0.112
42	2 44.603	2 54.460	3 4.316	3 14.173	3 24.029	3 33.886	3 43.742	3 53.598	42	0.115
43	2 44.767	2 54.624	3 4.480	3 14.337	3 24.193	3 34.050	3 43.906	3 53.763	43	0.118
44	2 44.932	2 54.788	3 4.645	3 14.501	3 24.358	3 34.214	3 44.071	3 53.927	44	0.120
45	2 45.096	2 54.952	3 4.809	3 14.665	3 24.522	3 34.378	3 44.235	3 54.091	45	0.123
46	2 45.260	2 55.117	3 4.973	3 14.830	3 24.686	3 34.543	3 44.399	3 54.256	46	0.126
47	2 45.425	2 55.281	3 5.137	3 14.994	3 24.850	3 34.707	3 44.563	3 54.420	47	0.129
48	2 45.589	2 55.445	3 5.302	3 15.158	3 25.015	3 34.871	3 44.728	3 54.584	48	0.131
49	2 45.753	2 55.610	3 5.466	3 15.322	3 25.179	3 35.035	3 44.892	3 54.748	49	0.134
50	2 45.917	2 55.774	3 5.630	3 15.487	3 25.343	3 35.200	3 45.056	3 54.913	50	0.137
51	2 46.082	2 55.938	3 5.795	3 15.651	3 25.508	3 35.364	3 45.220	3 55.077	51	0.140
52	2 46.246	2 56.102	3 5.959	3 15.815	3 25.672	3 35.528	3 45.385	3 55.241	52	0.142
53	2 46.410	2 56.267	3 6.123	3 15.980	3 25.836	3 35.693	3 45.549	3 55.405	53	0.145
54	2 46.574	2 56.431	3 6.287	3 16.144	3 26.000	3 35.857	3 45.713	3 55.570	54	0.148
55	2 46.739	2 56.595	3 6.452	3 16.308	3 26.165	3 36.021	3 45.878	3 55.734	55	0.151
56	2 46.903	2 56.759	3 6.616	3 16.472	3 26.329	3 36.185	3 46.042	3 55.898	56	0.153
57	2 47.067	2 56.924	3 6.780	3 16.637	3 26.493	3 36.350	3 46.206	3 56.063	57	0.156
58	2 47.232	2 57.088	3 6.944	3 16.801	3 26.657	3 36.514	3 46.370	3 56.227	58	0.159
59	2 47.396	2 57.252	3 7.109	3 16.965	3 26.822	3 36.678	3 46.535	3 56.391	59	0.162
Mean Solar.	$16^{\text{h.}}$	$17^{\text{h.}}$	$18^{\text{h.}}$	$19^{\text{h.}}$	$20^{\text{h.}}$	$21^{\text{h.}}$	$22^{\text{h.}}$	$23^{\text{h.}}$	For Seconds.	

TABLE IV.—LATITUDE BY POLARIS.

TABLE FOR FINDING THE LATITUDE BY AN OBSERVED ALTITUDE OF POLARIS.

Reduce the observed altitude of Polaris to the true altitude.

Reduce the recorded time of observation to local sidereal time.

If the sidereal time is
less than 1^h $19^m.1$, subtract it from 1^h $19^m.1$;
between 1^h $19^m.1$ and 13^h $19^m.1$, subtract 1^h $19^m.1$ from it;
greater than 13^h $19^m.1$, subtract it from 25^h $19^m.1$;
and the remainder is the hour-angle of Polaris.

With this hour-angle take out the correction from Table IV (below), and add it to or subtract it from the true altitude, according to its sign. The result is the latitude of the place.

***Example.*—1892, November 10, at 9^h 29^m 29^s, P. M., mean solar time, in longitude 29° east of Greenwich, suppose the true altitude of Polaris to be 29° 29′: required the latitude of the place.**

	h m s
Local astronomical mean time	9 29 29
Reduction from Table III, for 9^h 29^m 29^s	+ 1 34
Greenwich sidereal time of mean noon, November 10, page 183 .	15 20 25.3
Reduction from Table III, for longitude (= 1^h 56^m east, or minus)	— 0 19
Sum (having regard to signs) is equal to local sidereal time .	0 51 9.3
	h m s
	1 19 6
Subtract sidereal time	0 51 9.3
Remainder is equal to hour-angle of Polaris	0 27 56.7

	° ′
True altitude	+29 29.0
Correction from Table IV (below) .	— 1 16.4
Approximate Latitude . . .	+28 12.6

TABLE IV—1892.

Hour-Angle.	$0^{h.}$		$1^{h.}$		$2^{h.}$		$3^{h.}$		$4^{h.}$		$5^{h.}$	
m	° ′	′	° ′	′	° ′	′	° ′	′	° ′	′	° ′	′
0	−1 15.9	0.0	−1 13.3	0.5	−1 5.6	0.9	−0 53.3	1.2	−0 37.1	1.4	−0 18.7	1.6
5	1 15.9	0.1	1 12.8	0.5	1 4.7	0.9	0 52.1	1.3	0 35.7	1.5	0 17.1	1.6
10	1 15.8	0.1	1 12.3	0.5	1 3.8	0.9	0 50.8	1.2	0 34.2	1.5	0 15.5	1.6
15	1 15.7	0.1	1 11.8	0.6	1 2.9	1.0	0 49.6	1.3	0 32.7	1.5	0 13.9	1.6
20	−1 15.6	0.2	−1 11.2	0.6	−1 1.9	1.0	−0 48.3	1.3	−0 31.2	1.4	−0 12.3	1.6
25	1 15.4	0.2	1 10.6	0.6	1 0.9	1.0	0 47.0	1.3	0 29.8	1.5	0 10.7	1.7
30	1 15.2	0.2	1 10.0	0.6	0 59.9	1.1	0 45.7	1.4	0 28.3	1.6	0 9.0	1.6
35	1 15.0	0.2	1 9.4	0.7	0 58.8	1.1	0 44.3	1.4	0 26.7	1.6	0 7.4	1.6
40	−1 14.8	0.3	−1 8.7	0.7	−0 57.7	1.0	−0 42.9	1.4	−0 25.1	1.5	−0 5.8	1.7
45	1 14.5	0.4	1 8.0	0.8	0 56.7	1.1	0 41.5	1.4	0 23.6	1.6	0 4.1	1.7
50	1 14.1	0.4	1 7.2	0.8	0 55.6	1.1	0 40.1	1.5	0 22.0	1.6	0 2.4	1.6
55	1 13.7	0.4	1 6.4	0.8	0 54.5	1.2	0 38.6	1.5	0 20.4	1.7	−0 0.8	1.7
60	−1 13.3		−1 5.6		−0 53.3		−0 37.1		−0 18.7		+0 0.9	

Hour-Angle.	$6^{h.}$		$7^{h.}$		$8^{h.}$		$9^{h.}$		$10^{h.}$		$11^{h.}$	
m	° ′	′	° ′	′	° ′	′	° ′	′	° ′	′	° ′	′
0	+0 0.9	1.7	+0 20.3	1.6	+0 38.4	1.4	+0 54.1	1.1	+1 6.0	0.8	+1 13.4	0.4
5	0 2.6	1.7	0 21.9	1.6	0 39.8	1.4	0 55.2	1.1	1 6.8	0.8	1 13.8	0.4
10	0 4.3	1.6	0 23.5	1.5	0 41.2	1.4	0 56.3	1.0	1 7.6	6.7	1 14.2	0.4
15	0 5.9	1.6	0 25.0	1.6	0 42.6	1.4	0 57.3	1.1	1 8.3	0.7	1 14.6	0.3
20	+0 7.5	1.6	+0 26.6	1.6	+0 44.0	1.4	+0 58.4	1.1	+1 9.0	0.6	+1 14.9	0.3
25	0 9.1	1.6	0 28.2	1.6	0 45.4	1.3	0 59.5	1.0	1 9.6	0.6	1 15.2	0.2
30	0 10.7	1.6	0 29.8	1.5	0 46.7	1.2	1 0.5	1.0	1 10.2	0.6	1 15.4	0.1
35	0 12.3	1.6	0 31.3	1.4	0 47.9	1.3	1 1.5	1.0	1 10.8	0.6	1 15.5	0.1
40	+0 13.9	1.7	+0 32.7	1.5	+0 49.2	1.3	+1 2.5	0.9	+1 11.4	0.5	+1 15.6	0.1
45	0 15.6	1.6	0 34.2	1.5	0 50.5	1.2	1 3.4	0.9	1 11.9	0.5	1 15.7	0.1
50	0 17.2	1.5	0 35.7	1.4	0 51.7	1.2	1 4.3	0.9	1 12.4	0.5	1 15.8	0.1
55	0 18.7	1.6	0 37.1	1.3	0 52.9	1.2	1 5.2	0.8	1 12.9	0.5	1 15.9	0.0
60	+0 20.3		+0 38.4		+0 54.1		+1 6.0		+1 13.4		+1 15.9	

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